

APPENDIX "E"

GENERAL PROVISIONS FOR CONTRACT AT(30-1)-1293

BETWEEN

SYLVANIA ELECTRIC PRODUCTS, INC.,
AND THE U. S. ATOMIC ENERGY COMMISSION

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U. S. ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE

APPENDIX "E"

GENERAL PROVISIONS FOR CONTRACT AT(30-1)-1293
BETWEEN
SYLVANIA ELECTRIC PRODUCTS, INC.,
AND THE U. S. ATOMIC ENERGY COMMISSION

1. DEFINITIONS

As used in this Contract:

(a) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the General Provision entitled "Disputes."

(b) The term "Contracting Officer" means the person executing this Contract on behalf of the Government, and includes, except as otherwise provided in this Contract, the authorized representative of a Contracting Officer acting within the limits of his authority.

2. ACCOUNTS, RECORDS, AND INSPECTION

(a) Accounts. The Contractor shall maintain a separate and distinct set of accounts, records, documents, and other evidence showing and supporting all allowable costs incurred, revenues or other applicable credits, fixed fee accruals, and the receipt, use, and disposition of all Government property coming into the possession of the Contractor under this Contract. The system of accounts employed by the Contractor shall be satisfactory to the Commission and in accordance with generally accepted accounting principles consistently applied.

(b) Inspection and Audit of Accounts and Records. All books of account and records relating to this Contract shall be subject to inspection and audit by the Commission at all reasonable times, before and during the period of retention provided for in (d) below, and the Contractor shall afford the Commission proper facilities for such inspection and audit.

(c) Audit of Subcontractors' Records. The Contractor also agrees, with respect to any subcontracts (including lump-sum or unit-price subcontracts or purchase orders) where, under the terms of the subcontract, costs incurred are a factor in determining the amount payable to the subcontractor of any tier, to conduct an audit of the costs of the subcontractor in a manner satisfactory to the Commission or to have the audit conducted by the next higher tier subcontractor in a manner satisfactory to the Contractor and the Commission, except when the Commission elects to waive such audit or approves other arrangements for the conduct of the audit.

(d) Disposition of Records. Except as agreed upon by the Government and the Contractor, all financial and cost reports, books of account and supporting documents, and other data evidencing costs allowable and revenues and other applicable credits under this Contract, shall be the property of the Government, and shall be delivered to the Government or otherwise disposed of by the Contractor either as the Contracting Officer may from time to time direct during the progress of the work or in any event as the Contracting Officer shall direct upon completion or termination of this Contract and final audit of all accounts hereunder. All other records in the possession of the Contractor relating to this Contract shall be preserved by the Contractor for a period of six (6) years after settlement of the Contract or otherwise disposed of in such manner as may be agreed upon by the Government and the Contractor.

(e) Reports. The Contractor shall furnish such progress reports and schedules, financial and cost reports, and other reports concerning the work under this Contract as the Contracting Officer may from time to time require.

(f) Inspections. The Commission shall have the right to inspect the work and activities of the Contractor under this Contract at such times and in such manner as it shall deem appropriate.

(g) Subcontracts. The Contractor further agrees to require the inclusion of provisions similar to those in Paragraphs (a) through this Paragraph (g) of this clause in all subcontracts (including lump-sum or unit-price subcontracts or purchase orders) of any tier entered into hereunder where, under the terms of the subcontract, costs incurred are a factor in determining the amount payable to the subcontractor.

3. ASSIGNMENT

Neither this Contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor except as expressly authorized in writing by the Contracting Officer.

4. BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U. S. Code 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

- (i) "Components" means those articles, materials, and supplies, which are directly incorporated in the end products;
- (ii) "End products" means those articles, materials, and supplies, which are to be acquired under this Contract for public use; and

(iii) A "domestic source end product" means (a) an unmanufactured end product which has been mined or produced in the United States and (b) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 per cent of the costs of all its components. For the purposes of this Paragraph 4. (a) (iii) (b), components of foreign origin of the same type or kind as the products referred to in Paragraph 4. (i) or (ii) of this clause shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be used under this Contract (by the Contractor, subcontractor, materialmen, and suppliers) only domestic source end products, except end products

- (i) Which are for use outside the United States;
- (ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (iii) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or
- (iv) As to which the Commission determines the cost to the Government to be unreasonable.

5. CHANGES

(a) Changes and Adjustment of Fee. The Contracting Officer may at any time and without notice to the sureties, if any, issue written directions requiring additional work within the general scope of this Contract or directing the omission of or variation in work covered by this Contract. If any such direction results in a material change in the amount or character of the work described in the Article entitled "Scope of Work," an equitable adjustment of the fixed fee shall be made in accordance with the agreement of the parties and the Contract shall be modified in writing accordingly. Any claim by the Contractor for an adjustment under this General Provision must be asserted in writing within thirty (30) days from the date of receipt by the Contractor of the notification of change unless the Contracting Officer grants a further specific period of time for asserting the claim. A failure to agree on an equitable adjustment under this General Provision shall be deemed to be a dispute within the meaning of the General Provision entitled "Disputes."

(b) Work to Continue. Nothing contained in this clause shall excuse the Contractor from proceeding with the prosecution of the work in accordance with the requirements of any direction hereunder.

6. CLASSIFICATION

In the performance of the work under this Contract, the Contractor shall assign classifications to all documents, material, and equipment originated or generated by the Contractor in accordance with classification guidance furnished to the Contractor by the Commission. Every subcontract and purchase order issued hereunder involving the origination or generation of classified documents, material or equipment, shall include a provision to the effect that in the performance of such subcontract or purchase order the subcontractor or supplier shall assign classifications to all such documents, material and equipment in accordance with classification guidance furnished to such subcontractor or supplied by the Contractor.

7. CONTRACTOR'S ORGANIZATION

(a) Organization Chart. As promptly as possible after the execution of this Contract, the Contractor shall furnish to the Contracting Officer a chart showing the names, duties, and organization of key personnel to be employed in connection with the work, and shall furnish from time to time supplementary information reflecting changes therein.

(b) Supervising representative of contractor. A competent full time resident supervising representative of the Contractor satisfactory to the Contracting Officer shall be in charge of the work at all times.

(c) Control of employees. The Contractor shall be responsible for maintaining satisfactory standards of employee competency, conduct and integrity and shall be responsible for taking such disciplinary action with respect to his employees as may be necessary. In the event the contractor fails to remove any employee from the Contract work whom the Commission deems incompetent, careless or insubordinate, or whose continued employment on the work is deemed by the Commission to be contrary to the public interest, the Government reserves the right to require the Contractor to remove the employee.

8. COVENANT AGAINST CONTINGENT FEES

(a) Warranty - Termination or Deduction for Breach. The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this Contract without liability or in its discretion to deduct from the Contract price or consideration,

or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

(b) Subcontracts and Purchase Orders. Unless otherwise authorized by the Contracting Officer in writing the Contractor shall cause provisions similar to the foregoing to be inserted in all subcontracts and purchase orders entered into under this Contract.

9. DISPUTES

(a) Except as otherwise provided in this Contract, any dispute concerning a question of fact arising under this Contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within thirty (30) days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, That nothing in this Contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

10. EXAMINATION OF RECORDS

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this Contract until the expiration of three (3) years after final payment under this Contract unless the Commission authorizes their prior disposition.

(b) The contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of

his duly authorized representatives shall, until the expiration of three (3) years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract, unless the Commission authorizes their prior disposition. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding \$2,500, and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) Nothing in this Contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

11. LABOR

(a) Eight-Hour Law of 1912 - Overtime Compensation. This Contract, to the extent that it is of a character specified in the Eight-Hour Law of 1912, as amended (40 U. S. Code 324-326) and is not covered by the Walsh-Healey Public Contracts Act (41 U. S. Code 35-45), is subject to the following provisions and exceptions of said Eight-Hour Law of 1912, as amended, and to all other provisions and exceptions of said Law:

No laborer or mechanic doing any part of the work contemplated by this Contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this clause. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this Contract shall be computed on a basic day rate of eight hours per day; and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirements of this clause a penalty of five dollars shall be imposed for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this clause, and all penalties thus imposed shall be withheld for the use and benefit of the Government.

(b) Walsh-Healey Public Contracts Act. If this Contract is for the manufacture or furnishing of materials, supplies, articles, or equipment in an amount which exceeds or may exceed \$10,000 and is otherwise subject to the Walsh-Healey Public Contracts Act, as amended (41 U. S. Code 35-45), there are hereby incorporated by reference all representations and stipulations required by said Act and regulations

issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

(c) Convict Labor. In connection with the performance of work under this Contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

(d) Nondiscrimination in Employment. In connection with the performance of work under this Contract, the Contractor agrees as follows:

- (1) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.
- (2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.
- (3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Agency Contracting Officer, advising the said labor union of workers' representative of the Contractor's commitments under this nondiscrimination clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.
- (5) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, and by the rules, regulations, and orders of the said Committee, or pursuant thereto,

and will permit access to his books, records, and accounts by the Contracting Agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

- (6) In the event of the Contractor's non-compliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be cancelled in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.
- (7) The Contractor will include the provisions of the foregoing Paragraphs (1) through (6) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to Section 303 of Executive Order No. 10925 of March 6, 1961, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Contracting Agency may direct as a means of enforcing such provisions, including sanctions for non-compliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

(e) Notice of Labor Disputes. Whenever an actual or potential labor dispute is delaying or threatens to delay the performance of the work, the Contractor shall immediately notify the Contracting Officer in writing. Such notice shall include all relevant information concerning the dispute and its background.

12. LITIGATION AND CLAIMS

(a) Initiation of Litigation. If the Government requires the Contractor to initiate litigation, including proceedings before administrative agencies, in connection with this contract, the Contractor shall proceed with the litigation in good faith as directed from time to time by the Contracting Officer.

(b) Defense and Settlement of Claims. The Contractor shall give the Contracting Officer immediate notice in writing (1) of any action, including any proceeding before an administrative agency, filed against the Contractor arising out of the performance of this Contract, and (2) of any claim against the Contractor the cost and expense of which is allowable under the Article entitled ALLOWABLE COSTS AND FIXED FEE. Except as otherwise directed by the Contracting Officer, in writing, the Contractor shall furnish immediately to the Contracting Officer copies of all pertinent papers received by the Contractor with respect to such action or claim. To the extent not in conflict with any applicable policy of insurance, the Contractor may with the Contracting Officer's approval settle any such action or claim, shall effect at the Contracting Officer's request an assignment and subrogation in favor of the Government of all the Contractor's rights and claims (except those against the Government) arising out of any such action or claim against the Contractor, and if required by the Contracting Officer, shall authorize representatives of the Government to settle or defend any such action or claim and to represent the Contractor in, or to take charge of, any action. If the settlement or defense of an action or claim against the Contractor is undertaken by the Government, the Contractor shall furnish all reasonable assistance in effecting a settlement or asserting a defense. Where an action against the Contractor is not covered by a policy of insurance, the Contractor shall, with the approval of the Contracting Officer, proceed with the defense of the action in good faith; and in such event the defense of the action shall be at the expense of the Government; provided, however, that the Government shall not be liable for such expense to the extent that it would have been compensated for by insurance which was required by law or by the written direction of the Contracting Officer, but which the Contractor failed to secure through its own fault or negligence.

13. OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Contract, or to any benefit that may arise therefrom; but this clause shall not be construed to extend to this Contract if made with a corporation for its general benefit.

14. RENEGOTIATION

If this Contract is subject to the Renegotiation Act of 1951, as amended, the following provisions shall apply:

(a) This Contract is subject to the Renegotiation Act of 1951, as amended (P.L. 9, 82d Cong., 65 Stat. 7; P.L. 764, 83d Cong., 68 Stat. 1116; P.L. 216, 84th Cong., 69 Stat. 447; P.L. 870, 84th Cong., 70 Stat. 786; 86th Cong., 72 Stat. 1789; 86th Cong., 73 Stat. 210) and shall be deemed to contain all the provisions required by section 104 of said Act.

(b) The Contractor agrees to insert the provisions of this clause, including this paragraph (b), in all subcontracts, as that term is defined in section 103g of the Renegotiation Act of 1951.

15. REQUIRED BONDS AND INSURANCE - EXCLUSIVE OF GOVERNMENT PROPERTY

The Contractor shall procure and maintain such bonds and insurance as are required by law or by the written direction of the Contracting Officer. The terms of any such bond or insurance policy shall be submitted to the Contracting Officer for approval. In view of the provisions of the article entitled "Property" the Contractor shall not procure or maintain for its own protection any insurance (including self-insurance or reserves) covering loss or destruction of or damage to Government-owned property.

16. SAFETY, HEALTH AND FIRE PROTECTION

The Contractor shall take all reasonable precautions in the performance of the work under this Contract to protect the health and safety of employees and of members of the public and to minimize danger from all hazards to life and property, and shall comply with all health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission. In the event that the Contractor fails to comply with said regulations or requirements of the Commission, the Contracting Officer may, without prejudice to any other legal or contractual rights of the Commission, issue an order stopping all or any part of the work; thereafter a start order for resumption of work may be issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage. Where required by the Commission, due to the proximity of Site B, the Contractor's obligation hereunder shall apply to Site B to the extent that the Commission determines that the health and safety at Site A will be affected.

17. SECURITY

(a) Contractor's Duty to Safeguard Restricted Data and Other Classified Information. In the performance of the work under this Contract the Contractor shall, in accordance with the Commission's security regulations and requirements, be responsible for safeguarding restricted data and other classified matter and protecting against sabotage, espionage, loss and theft, the classified documents, materials, equipment, processes, etc., as well as such other material of high intrinsic or strategic value as may be in the Contractor's possession in connection with performance of work under this Contract. Except as otherwise expressly provided in the specifications the Contractor shall upon completion or termination of this Contract transmit to the Commission any classified matter in the possession of the Contractor or any person under the Contractor's control in connection with performance of this Contract.

(b) Regulations. The Contractor agrees to conform to all security regulations and requirements of the Commission, including without limitation such as may be necessary at Site B to the extent that the security of the work of Site A may be affected.

(c) Definition of Restricted Data. The term "Restricted Data", as used in this clause, means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954.

(d) Security Clearance of Personnel. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1954, the Contractor shall not permit any individual to have access to Restricted Data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. As used in this paragraph, the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1954. Access to classified information other than Restricted Data shall not be granted unless the recipient possesses appropriate security clearance.

(e) Criminal Liability. It is understood that disclosure of information relating to the work or services ordered hereunder to any person not entitled to receive it, or failure to safeguard any Restricted Data or any Top Secret, Secret, or Confidential matter that may come to the Contractor or any person under the Contractor's control in connection with work under this Contract, may subject the Contractor, his agents, employees, and subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, 68 Stat. 919.) (See also Executive Order 10104 of February 1, 1950, 15 F. R. 597.)

(f) Subcontracts and Purchase Orders. Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this Contract.

18. STATE AND LOCAL TAXES

The Contractor agrees to notify the Contracting Officer of any tax, fee, or charge:

(a) From which exemption is granted by State or local law, or

(b) Which is invalid under any provision of the Constitution of the United States levied or purported to be levied on the Contractor in respect of this Contract and to refrain from paying any such tax, fee, or charge unless otherwise authorized by the Contracting Officer. The Contractor further agrees to take such steps as may be required by the Contracting Officer to cause any such tax, fee, or charge to be paid under protest and, if so directed by the Contracting Officer, to cause to be assigned to the Government or its designee any and all rights to the abatement or refund of any such tax, fee, or charge, or to permit the Government to join with the Contractor in any proceedings for the recovery thereof or to sue for recovery in the Contractor's name.

The Government shall save the Contractor harmless from penalties and interest incurred through compliance with this clause.

19. USE OF CONCERNS IN LABOR SURPLUS AREAS

It is the policy of the Government to place supply contracts with suppliers who will perform such contracts substantially in areas of current labor surplus where this can be done at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy to the extent consistent with the efficient performance of this Contract. In complying with the foregoing, the Contractor, in placing its subcontracts, shall observe the following order of preference:

(a) small business concerns located in labor surplus areas;

(b) other concerns located in labor surplus areas;

(c) small business concerns not located in labor surplus areas; and

(d) any other concerns.

20. UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this Contract.

21. PERMITS

Except as otherwise directed by the Contracting Officer, the Contractor shall procure all necessary permits or licenses and abide by all applicable laws, regulations, and ordinances of the United States and of the State, territory, and political subdivision in which the work under this Contract is performed.

22. PURCHASES FROM CONTRACTOR-CONTROLLED SOURCES

(a) All solicitation of competitive bids for equipment, materials and supplies of the kind and character manufactured or sold by the divisions, departments, or affiliates of the Contractor, all evaluation thereof, and all awards shall be made solely by the Contracting Officer, unless otherwise authorized by the Contracting Officer. In all such cases in which the Contractor has design responsibility, the Contractor shall prepare proper specifications, drawings, and such other data as may be necessary, on a basis which will permit fair and open competition and orderly and timely procurement with relation to the work.

(b) The Contractor may procure on a negotiated basis, subject to the limitations in this paragraph and subparagraph (1) or (2) as applicable, materials, supplies, equipment, or services manufactured or sold by the Contractor's divisions, departments, or affiliates from such divisions, departments or affiliates; provided, however, that unless otherwise authorized by the Contracting Officer, no such procurement shall be made by the Contractor without prior written approval of the Contracting Officer.

(1) Standard commercial articles and standard supplies (of contractor-controlled sources, other than those manufactured or produced within the contracting component) which have published unit prices of less than one hundred dollars (\$100), or such higher amount as may be approved by the Contracting Officer, may be transferred and charged at amounts not in excess of (i) the net sales price concurrently charged the most favored nonaffiliated customer for such articles in the same quantities, or (ii) the lowest net sales price at which equivalent articles are available from other sources, whichever is lower in price without further negotiation as to unit price. If the Contractor does not meet this requirement, any excess cost occasioned thereby is unallowable. The Contracting Officer may require use of the equivalent articles available from other sources at a lower price or the solicitation

Sylvania Electric Products, Inc.
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of competitive bids from other suppliers of such articles. "Standard commercial articles" are those produced by the Contractor in the normal course of business, carried in stock or previously manufactured on a production basis, and having catalog item numbers and prices; "Standard supplies" are those carried in stock for use in normal operation.

- (2) All other articles produced or services performed by contractor-controlled sources shall be provided on the basis of allowable cost without additional fee, and subject to the terms of this Contract; provided, however, that if mutually agreed, they may be furnished at fixed prices fixed at the outset; provided further, that any such fixed prices shall be negotiated on the basis of estimated allowable costs under this Contract, without profit.

~~SECRET~~

DEPARTMENT OF ENERGY - YANAMAR RIVER DECLASSIFICATION REVIEW

1st Review Date: 4/10/63
 Authority: AEC ADD
 Name: [Signature]
 2nd Review Date: 4/10/63
 Authority: AEC
 Name: [Signature]

Determination (Circle Number)
 1. Classification Unchanged
 2. Classification changed to:
 3. Classification Cancelled.
 4. Other: CG-NRP-2 9-00

AC:RAM:fac

UNCLASSIFIED

JAN 12 1962

Mr. D. B. Metz, Manufacturing Manager
 Sylvania Division
 Sylvania Electric Products Inc.
 Hicksville, L. I., New York

Document No. SR-A-125
 This document consists of 2 pages
 No. 1 of 9 Copies, Series A

Dear Mr. Metz:

Reference is made to Appendix "B" to Modification No. 29 under Contract AT(30-1)-1193 and the following correspondence:

- Commission letter of November 20, 1961, from R. C. Blair to D. B. Metz
- Sylvan letter of December 8, 1961, from D. B. Metz to R. C. Blair
- Commission teletype of December 11, 1961, from R. C. Blair to D. B. Metz
- Sylvan letter of December 18, 1961, from D. B. Metz to R. C. Blair
- Sylvan letter of January 2, 1962, from W. R. Manders to R. C. Blair

The above-referenced documents cover requested scope of work changes subsequent to Modification No. 29 to the contract. Since the changes in these documents represent both increases and decreases in the scope of work and revisions to original requests, it is considered desirable that the revised estimated cost for the work during the period December 1, 1961, through March 31, 1962, be consolidated under one document.

The production levels for the Mark VII-A and Mark V-B programs for the period December 1961 through March 1962 are established as follows:

UNCLASSIFIED	Mark V-B	Mark VII-A
December	10	89
January	10	89
February	10	103
March	10	103

Confirming prior discussions between members of our respective staffs, you are authorized to proceed with the performance of the work as outlined above and requested to submit to this office your revised proposal covering the period December 1961 through March 1962. Your proposal should include an estimated cost schedule (similar to the schedule previously submitted in your December 8 proposal) of all programs authorized during the period

DESIGNED BY	Contracts	Admin	DOC	TSP	BVF	Managing Office
APPROVED BY	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]
DATE	1/10/62				1/11/62	1/10/62

~~SECRET~~

Mr. B. B. Metz

- 2 -

JAN 12 1962

December 1, 1961, through March 31, 1962, together with a revised fee calculation. It is understood that the effective date for the scope of work changes covered herein is December 1, 1961.

Your immediate consideration of this matter is requested. It is desirable that your proposal reach this office by January 24, 1962.

Sincerely yours,

(Signed) H. L. Kuhn for R. C. Blair
K. C. Blair
Manager

- Distribution:
- 1A & 2A - Addresses
 - 3A - Manager's File
 - 4A - M&P Division
 - 5A - Office of Chief Counsel
 - 6A - T&P Division
 - 7A - Contracts
 - 8A - Admin. Div. Rdg. File
 - 9A - S200 Reading File

~~SECRET~~

USDOE 017478

SPONSORED TASK NO. CH-4
MODIFICATION NO. 9

CONTRACT AT-(30-1)-1293

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

THIS MODIFICATION, entered into as of the 26th day of February, 1962, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC., SYLCOR DIVISION (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into a certain agreement known and designated as Sponsored Task CH-4 (hereinafter called the "Agreement"), such agreement having been entered into on July 1, 1959, and having been modified heretofore by Modifications 1 - 8; and

WHEREAS, the parties hereto desire to modify said agreement further as herein provided;

NOW, THEREFORE, the parties hereto agree that the Agreement, as heretofore modified, is hereby modified further in the following particulars, but in no others:

The subparagraph added to Paragraph 1, Description of Work, by Modification No. 8, is hereby modified as follows:

In the seventh line of said subparagraph, immediately following the date "September 13, 1961", insert the following words: "and in accordance with the classified letter dated February 1, 1962, from C. L. Karl, Manager of the Commission's Cincinnati Area Office, to the Contractor and Contractor's letter dated February 2, 1962."

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Except as otherwise provided in this modification, all the provisions of the Agreement as heretofore modified or supplemented shall remain in full force and effect.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS OFFICE

BY: *R. G. Humphries*
R. G. Humphries

TITLE: Director, Contract Division, OROO

WITNESSES:

Grace Green
Hicksville, N.Y.
(Address)

Barbara Ann Zito
Hicksville, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.
SYLCOR DIVISION

BY: *D. B. Metz*
D. B. Metz

TITLE: Manufacturing Manager
SYLCOR DIVISION

SPONSORED TASK NO. CH-4
MODIFICATION NO. 10

CONTRACT AT-(30-1)-1293

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

THIS MODIFICATION, entered into as of the 28th day of March, 1962, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC., SYLCOR DIVISION (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into a certain agreement known and designated as Sponsored Task CH-4 (hereinafter called the "Agreement"), such Agreement having been entered into on July 1, 1959, and having been modified heretofore by Modifications 1 - 9; and

WHEREAS, the parties hereto desire to modify said Agreement further as herein provided;

NOW, THEREFORE, the parties hereto agree that the Agreement, as heretofore modified, is hereby modified further in the following particulars; but in no others:

1. The following new subparagraph is added to Paragraph 1., Description of Work:

"During the period April 1, 1962, through September 30, 1962, the Contractor shall proceed with the final machining of semi-finished Mark VII-A cores as heretofore provided in the Agreement and in accordance with the classified letter dated February 1, 1962, from C. L. Karl, Manager of the Commission's Cincinnati Area Office to the Contractor and Contractor's letter dated March 8, 1962, which letters are hereby incorporated herein by reference."

2. The fixed-fee specified in Paragraph 3. is hereby increased by \$8,120.00 as a result of the work added hereby.

3. The completion date of the work stated in Paragraph 4. is changed to September 30, 1962.

SYL00051339

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Files
Box H-178-18

4. The amount obligated by Paragraph 5. is increased by \$143,460.00 as a result of the work added thereby. The revised amount of the Agreement is now as follows:

	<u>Estimated Cost</u>	<u>Fixed Fee</u>	<u>Total</u>
Obligated thru Modification No. 9	\$ 980,122.00	\$60,634.00	\$1,040,756.00
This Modification No. 10	<u>135,340.00</u>	<u>8,120.00</u>	<u>143,460.00</u>
	\$1,115,462.00	\$68,754.00	\$1,184,216.00

Except as otherwise provided in this modification, all the provisions of the Agreement as heretofore modified or supplemented shall remain in full force and effect.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS OFFICE

BY: *R. G. Humphries*

R. G. Humphries

TITLE: Director, Contract Division, ORGO

WITNESSES:

M. Lee
Hillsville, N.Y.
(Address)
Grace Baeden
Hillsville, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.
SYLCOR DIVISION

BY: *D. B. Metz*

D. B. Metz

TITLE: Manufacturing Manager

SYL00051340

A

This document consists of 2 pages.
No. 1 of 2 copies. Series A

3

WSRC DECLASSIFICATION REVIEW	
1st Review Date: 4/28/64	Determination (Circle Number)
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: R. L. Collins	2. Classification Changed To:
2nd Review Date: 4/28/64	
Authority: ADD	<input checked="" type="checkbox"/> 3. Classification Cancelled
Name: RWH	4. Other: C & T M P 2 9/64

SR-A-129

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED APRIL 1, 1962, UNDER
MODIFICATION NO. 31

As provided for in paragraph 1 of Article I of Modification 29 of Contract At(30-1)-1293, this Appendix "B" describes the scope of work to be performed by the Contractor for the period April 1, 1962, through September 30, 1962.

1. Mark VII-A - Mark V-B (Inner Fuel)

- a. The Contractor shall manufacture and furnish to the Commission Mark VII-A and Mark V-B slugs at monthly tonnages and/or piece rates as follows:

PERIOD	MARK VII-A (Tons)	MARK V-B (Pieces)	
		(Integral Rib)	(Ribless)
April	105	-	3,660
May	105	-	3,660
June	105	-	3,660
July	84	3,300	-
August	84	-	3,300
September	84	-	3,300

2. Mark V-B (Outer-Fuel)

The Contractor shall maintain its Mark V-B outer-fuel element facilities in ready standby which shall include such minimum token operation as required to maintain capability. It is understood that minimum token operation will not exceed an average production of approximately 100 pieces per month.

3. Thorium

The Contractor shall conduct a thorium program, using its best efforts, toward the manufacture and canning of 22 tons of Mark VII-T slugs, 14 tons of which are to be delivered to the Commission by September 1, 1962. The remaining eight tons shall be delivered as directed by the Commission. The program shall include the completion of specifications and operating procedures for canning thorium elements and the preparation of core materials including all necessary research, development, machining, canning and data accumulation.

4. Program Development

a. The Contractor shall conduct a Mark V-B fuel element development program for the purposes of achieving cost savings in the manufacture of Mark V-B elements. The program shall include necessary tooling and equipment to produce Mark V-B elements using new techniques, variation of fin and finless pieces and necessary development to assure that new elements meet required specifications.

b. Nondestructive Testing

In connection with the above programs, the Contractor shall conduct a development and testing program on nondestructive testing equipment. The program shall include development of a process and equipment capable of properly determining and classifying grain size, developments to determine subsurface nickel eutetic by either eddy current or ultrasonics, and the development of techniques necessary to prove out nondestructive testing equipment.

5. Du Pont Tooling

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

B

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office
FINDINGS AND DETERMINATION

AUTHORIZATION FOR MODIFICATION OF COST-PLUS-FIXED-FEE CONTRACT

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
Contract No. AT(30-1)-1293
Modification No. 30

The Atomic Energy Commission proposes to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc. to revise the scope of work to be performed by the Contractor during the period January 1, 1962, through March 31, 1962, and to provide an appropriate adjustment in estimated cost and fixed fee for work performed during the period October 1, 1961, through December 31, 1961. The total estimated cost of the work under the contract during this period is reduced by the amount of \$182,616 and the total fixed fee is reduced by \$3,000.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering an immediate unit-price arrangement.
2. Program requirements are subject to immediate change.
3. Continuous process development is required.
4. The adjustments in the estimated cost and fixed fee under this modification are considered to be reasonable.
5. The revised total fixed fee of \$98,460 averages six per cent (6%) of the estimated cost fee base and is considered fair. The fee was arrived at as a result of negotiations between the parties and is within the AEC fee curve limits.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee Supplemental Agreement, and I hereby authorize the use of said Supplemental Agreement.

By: H. L. Kilburn
Title: Dep. Mgr., SROO
Date: 4-5-62

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 30
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO Amend the scope of work and revise the
estimated cost and fixed fee.

EFFECTIVE DATE December 1, 1961

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>SROO</u>	<u>NYOO</u>	<u>TOTAL</u>
Previous Direct Cost (Modification No. 29)	\$17,706,045	\$3,951,805	\$21,657,850
This Modification (Net Decrease)	<u>(179,616)</u>	<u>-</u>	<u>(179,616)</u>
New Total Direct Cost	\$17,526,429	\$3,951,805	\$21,478,234
Previous Fixed Fee (Modification No. 29)	\$ 1,019,949	\$ 172,150	\$ 1,192,099
This Modification (Net Decrease)	<u>(3,000)</u>	<u>-</u>	<u>(3,000)</u>
New Total Fixed Fee	\$ 1,016,949	\$ 172,150	\$ 1,189,099
Total Revised Cost and Fee	<u>\$18,543,378</u>	<u>\$4,123,955</u>	<u>\$22,667,333</u>
Total Obligated February 28, 1962	<u>\$18,543,378</u>	<u>\$4,123,955</u>	<u>\$22,667,333</u>

A. E. C. FILE COPY

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 30
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into this 5th day of April, 1962, effective December 1, 1962, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December, 1951, the Government and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Government involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended:

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Paragraph 1. of ARTICLE I - SCOPE OF WORK, is revised to read as follows:

"1. Beginning October 1, 1961, the Contract shall proceed with the machining, manufacture, canning, testing, inspection, and delivery of metal and alloy slugs to the Commission and perform other services as required by the Commission, all in accordance with the classified Appendix "B," as amended, attached hereto and made a part hereof."

2. Paragraph 1., Estimate of Cost and Fixed Fee, of ARTICLE IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$21,478,234 exclusive of the Contractor's fixed fee. The Contractor's fixed fee, as set forth in paragraph 2., Article V, of the Contract is \$1,189,099. The estimated cost of the work, as described in paragraph 1. of the article entitled, SCOPE OF THE WORK, for the period October 1, 1961, to March 31, 1962, is \$1,865,224, exclusive of the Contractor's fixed fee of \$98,460."

Modification No. 30
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

3. In paragraph 2., Obligation of Funds, of ARTICLE IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, delete the figure "\$22,849,949" and substitute therefor the figure "\$22,667,333."
4. In subparagraph (b) of paragraph 2., Fixed Fee, of ARTICLE V - ALLOWABLE COST AND FIXED FEE, delete the figure "\$101,460" and substitute therefor the figure "\$98,460."
5. Subparagraph (b) of paragraph 2., Payment of Fixed Fee, of ARTICLE VI - PAYMENTS, is revised to read as follows:

"(b) For the period October 1, 1961, through March 31, 1962, ninety percent (90%) of the fixed fee of \$98,460 shall become due and payable in monthly installments of \$15,219 for the period October through December, 1961, and \$14,319 for the period January through March, 1962."
6. Appendix "B," Modification No. 29, Contract AT(30-1)-1293 is revised as of December 1, 1961, and is attached hereto and made a part hereof.
7. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION
BY: W. L. Kilburn
TITLE: Deputy Manager Savannah River Operations Office

WV
BPC
am
1/1
JH

WITNESSES:
Isaac Soden
Hicksville, ny
(Address)

Barbara Ann Zito
Hicksville, N. Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: D. B. Metz
TITLE: Manufacturing Manager Sylvania Division

Modification No. 30
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. Tooker, certify that I am ASST. SECRETARY
of Sylvania Electric Products Inc., named above; that D. B. METZ,
who signed this Agreement on behalf of said corporation, was then MFG. MGR.
Sylvania Div. of said corporation; and that this Agreement was duly signed
for and in behalf of said corporation by authority of its governing body and
within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 25th day of MARCH, 1962

By: John D. ...

CORPORATE SEAL

Extra copies

STATE OF NEW YORK }
COUNTY OF WARREN } AFFIDAVIT

I, D. Boyd Metz, being duly sworn, deposes and says that:

I am the Manufacturing Manager of the Syloer Division of Sylvania Electric Products Inc. The manufacturing facilities of the Syloer Division are located at Cantiague Road, Hicksville, New York. Sylvania Electric Products Inc., and its predecessors, for several years has had a contract, Contract AT(30-1) - 1293, with the Atomic Energy Commission, Savannah River Operations Office, for the manufacture of certain nuclear fuel elements at its plant located on Cantiague Road, Hicksville, New York. As Manufacturing Manager of the Syloer Division I am familiar with the aforementioned contractual relationship between Syloer and the Atomic Energy Commission.

Under the aforementioned Contract AT(30-1) - 1293, title to property furnished at the expense of the Atomic Energy Commission shall remain in the United States of America. Certain property listed by the Board of Assessors of Warren County, New York, in the 1961 - 62 assessment under Section No. 11, Block C, Lot No. 80 (formerly Lot No. 132 subsequently changed to Lot No. 732), as being the property of Sylvania Electric Products Inc., is not the property of Sylvania but rather is owned by the United States of America under the terms of the aforementioned contract. The property listed as a pump house, assessed

value of \$1,106.00; the storage tank, assessed value of \$1,750.00; and the sprinkler system, assessed value of \$4,947.00, in each instance was constructed in 1961 and at the expense of the Atomic Energy Commission and thus are the property of the Government.

D. Lloyd Metz

Subscribed and sworn to
before me this _____
day of May, 1962

A

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office
FINDINGS AND DETERMINATION

AUTHORIZATION FOR MODIFICATION OF COST-PLUS-FIXED-FEE CONTRACT

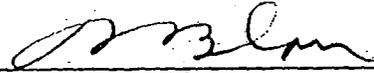
SYLOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
Contract No. AT(30-1)-1293
Modification No. 31

The Atomic Energy Commission proposed to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc. to define the scope of work to be performed by the Contractor during the period April 1 through September 30, 1962. The total estimated cost of the work under the Contract during this period is \$1,828,791 of which \$101,691 represents the fixed fee.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering an immediate unit-price arrangement.
2. Program requirements are subject to immediate change.
3. Continuous process development is required.
4. The estimated costs under this modification are considered to be reasonable.
5. The proposed fixed fee of \$101,691 averages six per cent of the estimated cost fee base, is within the AEC fee curve limits, and is considered fair and equitable.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee Supplemental Agreement, and I hereby authorize the use of said Supplemental Agreement.

By: 
R. C. Blair, Manager
Title: Savannah River Operations Office
Date: MAY 10 1962

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 31
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO Amend the scope of work and revise the
estimated cost and fixed fee.

EFFECTIVE DATE April 1, 1962

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>SROO</u>	<u>NYOO</u>	<u>TOTAL</u>
Previous Direct Cost (Modification No. 30)	\$17,526,429	\$3,951,805	\$21,478,234
This Modification (Net Increase)	<u>1,717,918</u>	<u>-0-</u>	<u>1,717,918</u>
New Total Direct Cost	<u>\$19,244,347</u>	<u>\$3,951,805</u>	<u>\$23,196,152</u>
Previous Fixed Fee (Modification No. 30)	\$ 1,016,949	\$ 172,150	\$ 1,189,099
This Modification (Net Increase)	<u>101,691</u>	<u>-0-</u>	<u>101,691</u>
New Total Fixed Fee	<u>\$ 1,118,640</u>	<u>\$ 172,150</u>	<u>\$ 1,290,790</u>
Total Estimated Cost and Fixed Fee	<u>\$20,362,987</u>	<u>\$4,123,955</u>	<u>\$24,486,942</u>
Total Amount Obligated as of April 1, 1962			<u>\$24,486,942</u>

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 31
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into this 31st day of May, 1962, effective April 1, 1962, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December, 1951, the Government and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Government involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and certain terms and conditions as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended:

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Appendix "B" Modification No. 29, Contract AT(30-1)-1293 is revised as of April 1, 1962, and is attached hereto and made a part hereof.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of ARTICLE IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$23,196,152, exclusive of the Contractor's fixed fee. The Contractor's fixed fee, as set forth in paragraph 2., Article V, of the Contract is \$1,290,790. The estimated cost of the work, as described in paragraph 1. of the Article, entitled, SCOPE OF WORK, for the period April 1, 1962, to September 30, 1962, is \$1,727,100, exclusive of the Contractor's fixed fee of \$101,691."
3. In paragraph 2., Obligation of Funds, of ARTICLE IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, delete the figure, "\$22,667,333" and substitute therefor the figure "\$24,486,942."

Modification No. 31
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. The following new subparagraph (c) is added to paragraph 2., Fixed Fee, of ARTICLE V - ALLOWABLE COST AND FIXED FEE:

"(c) The fixed fee applicable to work performed during the period April 1, 1962, to September 30, 1962, is \$101,691."

5. The following new subparagraph (c) is added to paragraph 2., Payment of Fixed Fee, of ARTICLE VI - PAYMENTS:

"(c) For the period April 1, 1962, through September 30, 1962, ninety per cent (90%) of the fixed fee of \$101,691 shall become due and payable in monthly installments of \$15,254."

6. Paragraphs 1. and 2. of Article IX - PATENTS, are revised to read as follows:

"1. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this Agreement, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title and rights under any application or patent that may result; provided, however, that with respect to such inventions or discoveries made or conceived in the course of, or under, the terms of paragraph 1. of Article I, the Contractor, in any event, shall retain at least a nonexclusive, irrevocable, royalty-free license under said invention, discovery, application, or patent, such license being limited to the manufacture, use and sale for purposes other than use in the production or utilization of special nuclear material or atomic energy. Subject to the license retained by the Contractor, as provided in this Article, the judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

"2. No claim for pecuniary award or compensation under the provisions of the Atomic Energy Acts of 1946 and 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this Agreement."

Modification No. 31
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

8. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION
BY: [Signature]
R. C. Blair, Manager
TITLE: Savannah River Operations Office

[Handwritten initials and marks on the right margin]

WITNESSES:
[Signature]
Hicksville Ny
(Address)

[Signature]
Hicksville N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: [Signature]
D. B. Metz
TITLE: Manufacturing Manager
Sylcor Division

I, J. M. Tackors, certify that I am Asst. Supervisor of Sylvania Electric Products Inc., named above; that D. B. Metz who signed this Agreement on behalf of said corporation, was then MFG. MGR Sylcor Div. of said corporation; and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 16 day of May, 1962.

By: [Signature]

CORPORATE SEAL

Contract No. AT(30-1)-1293 with
Sylvania Electric Products Inc.,
Sylcor Division
Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Manufacturing Manager	13 J	\$1123 - \$1865
Engineering Manager "B"	12 J	996 - 1670
Engineering Specialist Plant Manager "C" Section Head	11 J	912 - 1520
Manufacturing Superintendent Supervisor of Product Engineering Advanced New Product Development Engineer-Sylcor	10 J	830 - 1375
Advanced Research (or Development) Engineer Engineer-in-Charge Supervisor of Quality Control "A"	9 J	740 - 1230
Equipment Design Specialist General Foreman Project Engineer Research (or Development) Engineer Supervisor of Cost Control "A"	8 J	671 - 1115
Safety Engineer, Sylcor Research Metallographer Senior Engineer "A" Supervisor, Production Control Supervisor, Quality Control "B" Supervisor of Personnel "B"	7 J	612 - 1015

Contract No. AT(30-1)-1293 with
Sylvania Electric Products, Inc.,
Sylcor Division
Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Contract Administrator Equipment Designer, Sr. Purchasing Agent "A" Senior Engineer "B" Supervisor of Security and Administrative Service Supervisor of Maintenance "B" Toolroom Foreman Foreman Class I Tool Coordinator	6 J	\$ 567 - \$940
Buyer Cost Analyst & Statistician Supervisor of An Accounting Department Section	5 K	544 - 870
Engineer Foreman, Nuclear Products Industrial Engineer Accountant, Senior Technical Foreman II Personnel Assistant Systems and Procedures Analyst, Jr.	4 K	497 - 795

General Wage Increase - effective August 13, 1962
raised maximum of monthly salary ranges

Contract No. AT(30-1)-1293 with
Sylvania Electric Products, Inc.,
Sylcor Division
Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Weekly Salary Range</u>
Master Craftsman	65	\$ 132 - \$ 198
Technical Associate	64	123 - 185
Design-Draftsman	63	115 - 172
Material Requirements Clerk Production Supervisor I Maintenance Supervisor I Technician, Senior Production Scheduling Clerk	62	106 - 162
Draftsman Accountant, Junior Production Supervisor II Safety Inspector Supervisor of Plant Protection	60	95 - 144
Employment Interviewer & Counselor Buyer, Junior Nurse, Senior Technician Stock Clerk Production Control Clerk	59	89 - 135
Payroll Accountant Purchasing Clerk Secretary, Senior	58	84 - 127

Contract No. AT(30-1)-1293 with
Sylvania Electric Products, Inc.,
Sylcor Division
Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Weekly Salary Range</u>
Draftsman, Junior Nurse Production Section Leader	57	\$ 80 - \$ 120
Production Control Clerk, Junior Technician, Junior Secretary Accounting Clerk, Senior Stock Clerk, Junior Statistical Clerk, Senior	56	75 - 111
Clerk, Senior	55	72 - 103
Accounting Clerk, Junior Statistical (Technical) Clerk Telephone Operator II	54	69 - 96
Clerk-Typist	52	69 - 84

General Wage Increase - Effective September 3, 1962
and Change from Monthly to Weekly Salary Ranges

Contract No. AT(30-1)-1293 with
Sylvania Electric Products, Inc.
Sylcor Division
Appendix "A"

SCHEDULE II

HOURLY EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Hourly Salary Range</u>
Tool, Die & Model Maker "A"	LG 12	\$2.97 - \$3.56
Machinist "A" Electrician Specialist Inspector "A" Sheet Metal Specialist	LG 11	2.81 - 3.39
Mechanic "A" Welder "A" Sheet Metal Worker "A" Electrician "A" Welder I Machinist I	LG 10	2.65 - 3.19
Machinist "B" Carpenter Inspector "B"	LG 9	2.50 - 3.00
Mechanic "B" Process & Equipment Checker Assembly & Furnace Brazing Rolling Mill Operator Melter Guard Sergeant Fluoroscope Operator & X-Ray Inspector	LG 8	2.36 - 2.84

Those Listed Below

October 22, 1962

R. A. McFeely, Chief of Contracts
Contracts and Procurement Branch
Administrative Division
APPENDIX "A" - CONTRACT AT(30-1)-1293 WITH SYLVANIA ELECTRIC
PRODUCTS INC.

AC:PS

Attached for your information and file is a copy of Appendix "A"
Contract AT(30-1)-1293 with Sylvania Electric Products Inc.

Attachment:
As stated

Addressees:
E&F Division (4 cys.)
Engineering Division (1 cy.)
Security Division (1 cy.)
T&P Division (2 cys.)
Office of Chief Counsel (1 cy.)
Patent Branch, OCC (1 cy.)
Audit Branch, E&F (1 cy.)
Procurement, C&P Branch, Adm. Div. (1 cy.)

Handwritten notes:
1/25/62
McFeely

USDOE 017239

UNCLASSIFIED

Review of Sylcor Proposal DCF 2150-H for period October 1, 1962 to September 30, 1963. FB-893

Total Cost and Unit Cost

The total costs for Sylcor in FY 1963 using the estimated cost for nine months from proposed DCF 2150, actual July 1962 costs and estimated costs from the amounts approved in April 1962 for August and September are about \$3,407,000 or some \$583,000 more than is included in the current Budget for FY 1963.

The major cause for concern here is the fact that the estimated total cost and unit cost for Mark V-B's increase over the Budget estimate. Our FY 1963 Budget estimates were based on the assumption that a finless Mark V-B element would be produced with a ribbed washer as a spacer. However, the Sylcor proposal is based on the assumption that the major portion of the V-B production will be finned type elements. This increases the unit cost of Sylcor V-B elements \$.69, from \$1.78 to \$2.47. It was our understanding that if we couldn't produce Mark V-B's at about the same costs as Mark VII-A's by the end of FY 1963, we might consider some other type fuel element. Are we to continue with V-B's even though the unit cost is not competitive with VII-A's?

The following are tables comparing proposal costs with the Budget. For (a) Total Budget, (b) Unit Costs Comparison, (c) V-B Unit Costs, (d) Unit Costs V-B with Fins, (e) Unit Cost V-B Finless, (f) FY 1963 Production Comparison.

DEPARTMENT OF ENERGY - ADVANCED RESEARCH AND DEVELOPMENT DIVISION
 1st Review Date 4/8/63
 Authority: BADC UADD
 Name: [Signature]
 2nd Review Date 7/2/63
 Authority: [Signature]
 Name: [Signature]

1. Classification (Circle Number)
 2. Classification (Type) (Unchanged)
 3. Classification (Type) (Changed to)
 4. Other: G.N.P. 2 9.00

TABLE A

	<u>FY 1963 Budget</u>	<u>Sylcor Proposal^{a/}</u>	<u>Variance</u>
<u>Production and Unit Cost</u>			
Mark VII-A Cost	\$1,069,000	\$1,001,000	
Mark VII-A Production Lbs.	960,000	848,000	
Mark VII-A Unit Cost	\$1.11	\$1.18	
Mark V-B Cost	\$1,208,000	\$1,709,000	
Mark V-B Production Lbs.	678,000	692,000	
Mark V-B Unit Cost	\$1.78	\$2.47	
Total Natural Canning	\$2,275,000	\$2,710,000	
Thorium Canning	99,000	165,000	
Development	200,000	240,000	
Equipment	250,000	292,000	
Total	\$2,824,000	\$3,407,000	

a/ Includes nine months from Sylcor Proposal DCF 2150-H plus July 1962 actual plus August and September from Financial Plan approved in April 1962.

UNCLASSIFIED



TABLE B

	Du Pont <u>Outers</u>	Du Pont <u>Finishing</u>	Sylcor <u>Canning</u>	<u>Total</u>
Total Est. Costs	\$2,251,000	\$346,000	\$1,709,000	\$4,306,000
Production Lbs.	1,608,000	692,000	692,000	2,900,000
Unit Cost/Lb.	\$1.40	\$.50 ^{a/}	\$2.47	\$1.87
<hr/>				
FY 1963 Budget	\$1.40	\$.65	\$1.78	\$1.71

a/ Assumed Amount

Actual VII-A FY 1962

Total Costs	\$2,396,000	\$414,000	\$2,103,000	\$4,913,000
Production Lbs.	1,415,000	1,902,000	1,902,000	3,317,000
Unit Cost/Lb.	\$1.69	\$.22	\$1.11	\$1.48

TABLE C

Unit Cost Estimates SCN FY 1963-64

<u>V-B Regular & Pinless</u>	<u>Prod. Lbs.</u>	<u>Cost</u>	<u>Unit Cost/Lb.</u>
* July 1962	4,700	\$ 24,000	\$5.10
August	21,000	64,000	3.05
September	21,000	50,000	2.38
October	20,000	82,900	4.14
November	20,000	79,200	3.96
December	32,000	87,500	2.73
January 1963	74,000	186,200	2.52
February	98,000	219,500	2.23
March	104,000	232,800	2.24
April	100,000	230,100	2.30
May	100,000	233,500	2.33
June	100,000	225,100	2.25
* July	100,000	136,300	1.36
August	100,000	220,500	2.20
September	100,000	212,800	2.13

* Vacation month - Production estimates were not adjusted.

TABLE D

<u>Mark V-B Fins</u>	<u>Production Lbs.</u>	<u>Cost</u>	<u>Unit Cost</u>
July	4,700	\$ 24,000	\$5.11
August	21,000	64,000	3.05
September	21,000	50,000	2.38
October	20,000	73,000	3.65
November	20,000	69,000	3.45
December	20,000	68,000	3.40
January	20,000	87,000	4.35
February	44,000	127,000	2.89
March	60,000	158,000	2.60
April	100,000	224,000	2.24
May	100,000	228,000	2.28
June	100,000	219,000	2.19
July *	100,000	127,000	1.27
August	100,000	214,000	2.14
September	100,000	206,000	2.06

* Vacation month - Production estimates were not adjusted.

TABLE E

<u>Mark V-B Finless</u>	<u>Production</u>	<u>Cost</u>	<u>Unit Cost</u>
July	---		
August	---		
September	---		
October	---	\$ 5,300	---
November	---	5,000	---
December	12,000	14,700	\$1.22
January	54,000	98,000	1.76
February	54,000	88,000	1.63
March	44,000	73,000	1.65
April	---		
May	---		
June	---		
July	---		
August	---		
September	---		

TABLE F

	<u>Mark VII-A Tons</u>		<u>Mark V-B Tons</u>	
	<u>Budget</u>	<u>DCF 2150 SCN</u>	<u>Budget</u>	<u>DCF 2150 SCN</u>
<u>SCN FY 1963 Prod.</u>				
<u>Production</u>				
July *	80	46	11	2
August ^{b/}	80	84	12	10
September ^{b/}	80	84	10	10
October	80	70	10	10
November	80	70	10	10
December	80	70	10	16
January	-0-	-0-	46	37
February	-0-	-0-	46	49
March	-0-	-0-	46	52
April	-0-	-0-	46	50
May	-0-	-0-	46	50
June	-0-	-0-	46	50
	<u>480</u>	<u>424</u>	<u>339</u>	<u>346</u>

* Actual

^{b/} From Letter of March 12, 1962

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Cost Experience Previous Period

For the six months period ending September 30, 1962 it appears that there will be a slight overrun of costs of about \$36,000 out of an estimated total of \$1,829,000. This overrun is primarily in Du Pont tooling. For other activities, the actual vs the estimate is very close as follows.

	<u>Projected Actual</u>	<u>Fin. Plan</u> (In Thousands of Dollars)	<u>Actual Over(Under)</u>
Canning	1,488	1,491	(3)
Development	40	42	(2)
Equipment	183	151	12
Tooling	72	43	29
Fee	<u>102</u>	<u>102</u>	-
Total	<u>1,885</u>	<u>1,829</u>	<u>36</u>

Overhead

Overhead as a percentage of direct labor increases from a rate of 104% in FY 1962 to an estimated 119% for the ensuing period October 1, 1962 to September 30, 1963. Within the overhead accounts, overhead labor shows an actual increase of \$21,000 in FY 1963 over FY 1962; occupancy shows an increase of some \$33,000. An explanation should be provided why overhead cannot be reduced more since total output from Sycor is being reduced about 39%, i.e., total natural uranium slugs produced in FY 1962 - 2,225,000 lbs; estimated natural uranium slugs to be produced in incoming period of 1,368,000. There is no appreciable change in other activities such as equipment, development, etc.

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~~CONFIDENTIAL~~

An Overhead Comparison Follows

	<u>Actual</u> <u>FY 1962</u>	SCN Est. 10/1/62 <u>9/30/63</u> (000 Omitted)	<u>Actual (Over) Under</u>
Overhead Labor	340	361	21
Operating expenses	220	205	(15)
Utilities	56	62	6
Occupancy	63	96	33
Payroll Costs	315	220	(95)
Allow. Dir. Service	77	72	(5)
Allow. Area Service	60	38	(22)
Allow. Security	52	55	3
Expense Transfer	(11)	-	11
Liability Ins.	<u>5</u>	<u>5</u>	<u>-</u>
Total	<u>1,177</u>	<u>1,114</u>	<u>(63)</u>
Direct Labor	1,128	934	(194)
Ratio	104%	119%	-

~~CONFIDENTIAL~~

G & A

Actual G&A for FY 1962 was \$159,000; the estimate for the ensuing period is \$196,000. However, the actual rate of G&A for the last several months has been at an annual rate of about \$200,000. The G&A cost in FY 1961 was \$173,000. It is assumed that corporate changes account for the change in G&A rates. The FY 1962 level was low because of adjustments as a result of audits?

Direct Labor

Direct labor decreased \$194,000 from the FY 1962 level of \$1,128,000 to an estimated \$934,000 in FY 1963. This is a reduction in direct labor of 20% while production decreases about 40%.

Materials

Material costs decrease about \$95,000 from \$937,000 in FY 1962 to a total of \$842,000 in FY 1963. The use of high cost Mark V-B cans in FY 1963 probably accounts for there not being a greater reduction in material costs in FY 1962.

Personnel

Since we are spending large sums of money for development at SRL, it is necessary that we essentially double the development force at Sylcor within the next year? It would also seem possible that a reduction of more than 20 people could be made at Sylcor with a curtailed program.

Conclusions

1. A decision be obtained from Management as to whether or not we will continue with V-B's even though the unit costs exceed VII-A's and even though we have informed Headquarters that we will not use an element if the unit cost exceeds VII-A.
2. If Management accepts the canning of V-B's as outlined in the Sylcor proposal, obtain justification for the following.
 - (1) Justification for discrepancies in overhead.
 - (2) Justification of increased level of development personnel and reasons why personnel cannot decrease more as production is greatly curtailed.

SPONSORED TASK NO. CH-4
MODIFICATION NO. 11

CONTRACT AT-(30-1)-1293

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

THIS MODIFICATION, entered into as of the 28th day of September, 1962, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC., SYLCOR DIVISION (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into a certain agreement known and designated as Sponsored Task CH-4 (hereinafter called the "Agreement"), such Agreement having been entered into on July 1, 1959, and having been modified heretofore by Modifications 1 - 10; and

WHEREAS, the parties hereto desire to modify said Agreement further as herein provided;

NOW, THEREFORE, the parties hereto agree that the Agreement, as heretofore modified, is hereby modified further in the following particulars, but in no others:

1. The following new subparagraph is added to Paragraph 1, Description of Work:

"During the period October 1, 1962, through December 31, 1962, the Contractor, in accordance with the letters dated August 7, 1962, and August 30, 1962, from C. L. Karl, Manager of the Commission's Cincinnati Area Office, to the Contractor, and the Contractor's letter dated September 11, 1962, which letters are hereby incorporated herein by reference, shall proceed with (1) the final machining of semi-finished Mark VII-A cores as heretofore provided in the Agreement and in said letters; (2) the nondestructive testing of the salt-oil heat treated cores supplied by the Contractor under Sponsored Task CH-4; and (3) the close-out activities required to complete Sponsored Task CH-4."

2. The fixed-fee specified in Paragraph 3. is hereby increased by \$3,020.00 as a result of the work added thereby.

SYL00051391

NARA-SE
Series 16-Cats
Ridge Contract
Files
Box H178-18

3. The completion date of the work stated in Paragraph 4. is changed to December 31, 1962.

4. The amount obligated by Paragraph 5. is increased by \$53,360.00 as a result of the work added thereby. The revised amount of the Agreement is now as follows:

	<u>Estimated Cost</u>	<u>Fixed Fee</u>	<u>Total</u>
Obligated thru Modification No. 10	\$1,115,462.00	\$68,754.00	\$1,184,216.00
This Modification No. 11	<u>50,340.00</u>	<u>3,020.00</u>	<u>53,360.00</u>
	<u>\$1,165,802.00</u>	<u>\$71,774.00</u>	<u>\$1,237,576.00</u>

Except as otherwise provided in this modification, all the provisions of the Agreement as heretofore modified or supplemented shall remain in full force and effect.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS OFFICE

BY: R. G. Humphries
R. G. Humphries
TITLE: Director, Contract Division, ORC

WITNESSES:

Grace Gueden
Hicksville NY
(Address)
Max Lee
Hicksville NY
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.
SYLCOR DIVISION

BY: D. B. Metz
D. B. Metz
TITLE: Manufacturing Manager

A

NOV 28 1963

WSRC DECLASSIFICATION REVIEW	
Review Date: 4/28/04	Determination (Circle Number)
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: RT Collins	2. Classification Changed To:
2nd Review Date: 4/28/04	3. Classification Cancelled
Authority: ADD	4. Other: CG-AMP-2 9/2
Name: [Signature]	

This document consists of 6 pages
No. 1 of 40 copies Series A

SR-A-137

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED OCTOBER 1, 1962, UNDER
MODIFICATION NO. 32

As provided for in paragraph 1 of Article I of Modification No. 29 of Contract AT(30-1)-1293, this Appendix "B" describes the scope of work to be performed by the Contractor for the period October 1, 1962, through September 30, 1963.

1. MARK VII-A - MARK V-B (Inner-Fuel)

- a. The Contractor shall manufacture and furnish to the Commission Mark VII-A and Mark V-B slugs at monthly tonnages as follows:

Period	Mark VII-A (Tons)	Mark V-B (Tons)	
		Integral Rib	Ribless
October 1962	70	10.2	0
November 1962	70	10.2	0
December 1962	70	10.2	6
January 1963	0	27.0	27
February 1963	0	38.0	27
March 1963	0	53.0	22
April 1963	0	71.0	0
May 1963	0	71.0	0
June 1963	0	71.0	0
July 1963	0	48.0	0
August 1963	0	71.0	0
September 1963	0	59.0	0

- b. The Contractor shall produce by November 29, 1962, 50 Mark V-B IF ribbed dummy slugs according to Du Pont Drawing SSK 4-3-222 using unplated stainless steel as the core material rather than uranium.

2. MARK V-B (Outer-Fuel)

Maintain Mark V-B outer-fuel element facilities in ready standby which shall include such minimum token operation as required to maintain capability. It is understood that minimum token operation will not exceed an average production of approximately 100 pieces per month.

Cop 9A & 10A destroyed 7/27/66

3. PROGRAM DEVELOPMENT

a. Mark V-E

Initiate development of a process for canning Mark V-E inner-fuel elements by the hot pressure bonding process. Contractor will conduct a program, using its best efforts, toward the preparation of approximately 1,750 flow test, qualification, and reactor test pieces by June 1, 1963.

The program shall include the preparation of specifications and operating procedures for canning Mark V-E inner fuel elements, including all necessary research development, canning and data accumulation. This program will also include the design of the necessary tooling and equipment for converting to a production program in either hot pressure bonding or hot die sizing process, whichever method is authorized by the Commission.

b. Hot Die Sizing

Continue investigation into the hot die sizing process of cladding Mark V-B inner fuel elements to determine the feasibility and economic advantages, if any, of this method as a production process. Contractor shall design, procure and fabricate such equipment and tooling as is necessary to prepare test pieces, and conduct experimental procedures.

Also, the Contractor shall prepare specifications and operating procedures for canning V-B and Mark V-E inner fuel elements in a production method, if possible. Further, Contractor shall design such tooling and equipment as is necessary to automate or mechanize the process evolved and to adapt this process to the Mark V-E fuel element when authorized by the Commission.

c. Nondestructive Testing

Investigate nondestructive techniques for the inspection of all fuel element cores and slugs processed at the Hicksville plant. The work under this program will consist of the following:

1. Continuation of work on the development of a method to detect the formation of a nickel-uranium eutectic in hot pressure bonded slugs.
2. Design of a positive nondestructive test for accurately distinguishing grain size and orientation of uranium after heat treatment and the incorporation of such test in the production line to permit inspection of 100 per cent of the cores processed.

3. Improvement of a test to measure nickel thickness on cores and the plating quality and the modification of the equipment so that it is applicable to Mark V-E size cores and can be incorporated into an automatic assembly operation.
4. Modification of bond testing equipment to cover Mark V-E size cores and the incorporation of bond testing into the planned automated inspection equipment.
5. Automation of recent developments in the field of nondestructive testing and the extension thereof to development and production programs on V-B, V-E, and hot die sizing.

4. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

5. THORIUM

The Contractor shall complete the thorium program initiated under Modification No. 31 to the Contract.

~~SECRET~~

Office Memorandum • UNITED STATES GOVERNMENT

TO : J. S. Hopkins, Director
Administrative Division

FROM : *A. Y. Morgan*
A. Y. Morgan, Director
Budget & Finance Division

DATE: OCT 1 1962

UNCLASSIFIED

SUBJECT: REVIEW OF SYLCOR PROPOSAL FOR PERIOD 10/1/62 - 9/30/63
Document No. SR-*FB-894*

FB:MER:mp

This document consists of 7 pages,

We have reviewed Sylcor's proposals for ~~the period October 1, 1962 through September 30, 1963~~ *the period October 1, 1962 through September 30, 1963* and submit the following comments, cost data, conclusion, and contract modification financial information.

DEPARTMENT OF ENERGY SAVANNAH RIVER PLANT SECURITY ADMIN REVIEW

Determination (Circle Number)

1. Classification Unchanged

2. Classification changed to:

3. Classification Canceled

4. Other: *C: NNP 2*

1st Review Date *4/8/63*

Authority: *ADC* *ADD*

Name: *Bill La. B.*

2nd Review Date *4/10/63*

Authority: *ADD*

Name: *Morgan*

A. Comments

On September 10, 1962 a proposal was received from Sylcor (DCF 2150-H) covering the operation of the Hicksville Plant (SROO work) for the year October 1, 1962 to September 30, 1963. After review of this proposal, certain questions were raised:

1. Unit and total costs for Mark V-B were considerably higher than had been budgeted. Also, finned canned inner slugs were now contemplated (at Du Pont request) rather than smooth inners with ribbed washers as originally planned.
2. Overhead seemed high in comparison to previous periods.
3. No explanation was provided for variations in overhead accounts (which had been previously requested from Sylcor).

As a result of the above questions, two courses of action were pursued: (a) Du Pont was notified of Sylcor's estimate for V-B's and was requested to inform us if the total V-B Program could be done within the previously budgeted FY 1963 amount; (b) J. J. Wise and N. J. Donahue met with Sylcor, hopefully, to negotiate a downward adjustment of Sylcor's V-B estimate and to obtain adequate justification and explanation for items 2 and 3 above.

We have been informed by Du Pont that they can stay within the FY 1963 total Mark V-B budget even though the Sylcor estimate is higher.

at (30-1)-1293

UNCLASSIFIED

~~RESTRICTED DATA~~

~~Document contains Restricted Data...~~

~~in the...~~

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~~to an unauthorized person...~~

~~SECRET~~

A revised proposal (DCF 2165-H) was received from Sylcor on September 24, 1962 in which a reduction of about 7 per cent was made in their V-B estimates. Also, sufficient justification, explanation, and analysis were provided concerning the overhead adjustments.

B. Cost Data

Table I - Comparison of Sylcor's Revised Estimate with FY 1963 Estimate

	Sylcor Rev. Est. ^{a/}	FY 1963 Budget	Sylcor Over (Under) Budget
Mark VII-A Cost	\$ 870,000	\$1,069,000	\$ (199,000)
Mark V-B Cost	\$1,601,000	\$1,206,000	\$ 395,000
Mark V-B Prod.	720,000	678,000	42,000
Mark V-B Unit Cost	<u>\$2.22</u>	<u>\$1.78</u>	<u>\$.44</u>
Thorium Canning	\$ 162,000	\$ 99,000	\$ 63,000
Development	230,000	200,000	30,000
Equipment	355,000	250,000	105,000
Total	<u>\$3,218,000</u>	<u>\$2,824,000</u>	<u>\$ 394,000</u>

a/ Actual July and August

Table II - Comparison Sylcor Proposals

<u>Item - Activity</u>	<u>Sylcor Proposals</u>		
	<u>Original Sept. 10</u>	<u>Revised Sept. 24</u>	<u>Revised Over(Under)</u>
	(In Thousands of Dollars)		
Mark VII-A	436	438	2
Mark V-B	2,146	2,004	(142)
Process Dev.	290	286	(4)
Tooling (DuPont)	105	103	(2)
Fabr. Equipment	227	222	(5)
Pur. Equipment	129	134	5
Thorium Canning	67	65	(2)
Total	<u>3,400</u>	<u>3,252</u>	<u>(148)</u>

Table II - Comparison Sylcor Proposals (cont.)

Item - Type of Expense	Sylcor Proposals		
	Original	Revised	Revised
	Sept. 10	Sept. 24	Over(Under)
	(In Thousands of Dollars)		
Direct Labor	934	929	(5)
Direct Materials	842	765	(77)
Overhead	1,114	1,053	(61)
Gen. & Admin.	196	194	(2)
Subtotal fee Base	<u>3,086</u>	<u>2,941</u>	<u>(145)</u>
Fee @ 6%	185	177	(8)
Pur. Equipment	129	134	5
Total Costs	<u>3,400</u>	<u>3,252</u>	<u>(148)</u>

The significant change in Sylcor's estimates as evidenced above is: (a) Reduction of \$142,000 in Mark V-B costs which results in a reduction of \$.18 per lb. in unit costs. This reduction in V-B was accomplished through a reduction in material and overhead costs; (b) A savings of \$8,000 in fee is achieved. It is also significant to note that based on a month to month tabulation of V-B unit costs (inner ribbed), there is a reduction from \$3.35 per pound in October 1962 to \$1.77 in September of 1963.

Table III - Comparison of Sylcor's Revised Estimates for the Ensuing Period with Fiscal Year 1962 Actual Costs

Item - Activity	FY 1962	Sept. 24	Proposal
	Actual	1962	Over(Under)
		Proposal	Actual
	(In Thousands of Dollars)		
Mark VII-A	\$2,103	\$ 438	\$(1,665)
Mark V-B	707	2,004	1,297
Process Dev.	438	286	(152)
Tooling	108	103	(5)
Fabr. Equipment	173	222	49
Pur. Equipment	105	134	29
Thorium Canning	78	65	(13)
Total	<u>\$3,712</u>	<u>\$3,252</u>	<u>\$ (460)</u>

~~SECRET~~

Table III - Comparison of Sylcor's Revised Estimates for the
Ensuuing Period with Fiscal Year 1962 Actual Costs
(cont.)

<u>Item - Type of Expense</u>	<u>FY 1962</u>	<u>Sept. 24</u>	<u>Proposal</u>
	<u>Actual</u>	<u>1962</u>	<u>Over(Under)</u>
	(In Thousands of Dollars)		
Direct Labor	\$1,128	\$ 929	\$ (199)
Materials	937	765	(172)
Overhead	1,177=104%	1,053=113%	(124)
	D L	D L	
G & A	159=4.9%	194=7.0%	35
Subtotal	<u>3,401</u>	<u>2,941</u>	<u>(460)</u>
Fee	206=6.06%	177=6.0%	(29)
Pur. Equipment	105	134	29
Total	<u>\$3,712</u>	<u>\$3,252</u>	<u>\$ (460)</u>

Table IV - Production and Unit Costs

<u>Product - Lbs.</u>			
Mark VII-A	2,049,000	420,000	-
Mark V-B	<u>189,000</u>	<u>948,000</u>	-
Total Product	<u>2,238,000</u>	<u>1,368,000</u>	-
Costs VII-A & V-B	\$2,810,000	\$2,442,000	-
Unit Cost/Lb.	<u>\$1.25</u>	<u>\$1.78</u>	-
% Lbs. Decrease	39%		-
% Dollars Decrease	13%		-

Comments on Variations Between Actual 1962 and Estimates 1963

Direct Labor and Materials decrease as a result of decreases in production. However, the unit cost for Direct Materials remains considerably higher in FY 1963 because of the use of more expensive Mark V-B finned cans.

Overhead as a percentage of direct labor increases. This is due to a normal situation wherein the reduction in overhead is not proportionate to reductions in direct costs. Also, the OROO machining work is scheduled to be discontinued after December 1962 and therefore, a greater share of overhead must be borne by the SROO work.

G & A as a percentage of costs increased from 4.9% to 7.0%. One of the main contributing factors to this variation is due to an adjustment in G & A in FY 1962 which resulted in lower than normal costs. The current G & A rate (last six months of FY 1962) is about \$200,000 per year.

Conclusion

Based on the foregoing comments, cost comparisons, and analysis and considering that Sylcor is in a transitional period of production going from Mark VII-A to V-B, during which optimum costs conditions are not expected to exist, we consider the proposal to be reasonable and acceptable.

Financial Information for Contract Modification

Estimated Cost and Fixed Fee

<u>Cost & Fee</u>	<u>Estimated Cost</u>	<u>Fee @ 6%</u>	<u>Total</u>
Mark V-B	\$1,877,500	\$112,644 ^{a/}	\$1,990,144
Mark VII-A	413,100	24,786	437,886
Development	269,600	16,176	285,776
Fabr. Equipment	221,700	13,302	235,002
Tooling	97,400	5,844	103,244
Thorium	61,700	3,702	65,402
Subtotal	<u>2,941,000</u>	<u>176,454</u>	<u>3,117,454</u>
Pur. Equipment	134,546	-	134,546
Total	<u>\$3,075,546</u>	<u>\$176,454</u>	<u>\$3,252,000</u>

a/ Adjusted by \$6 to agree with Sylcor request.

<u>Fee Base</u>	
Salaries	\$ 928,700
Materials	765,400
Overhead	1,053,100
G & A	193,800
	<u>2,941,000</u>
Fee @ 6%	176,460
Less \$6 Adjustment	6
	<u>\$ 176,454</u>

Obligations

The obligations should be increased by \$3,248,617 to a new total of \$27,735,559 computed as follows:

Estimated Cost for Period 10/1/62 - 9/30/63	\$3,252,000
Estimated Overrun Cost Period Ending 9/30/62	19,310
Changes in Stores Inventories FY 1963	(69,417)
Changes in Working Capital FY 1963	(3,276)
Estimated Commitments 9/30/63	50,000
Total Est. Obligations	<u>\$3,248,617</u>

The cover sheet for the contract should be changed to read as follows:

	<u>SROO</u>	<u>NYOO</u>	<u>Total</u>
Previous Direct Cost (Mod. 31)	\$19,244,347	\$3,951,805	\$23,196,152
This Mod.(32) Increase	<u>3,072,163</u>	<u>-0-</u>	<u>3,072,163</u>
New Total Direct Cost	<u>\$22,316,510</u>	<u>\$3,951,805</u>	<u>\$26,268,315</u>
Previous Fixed Fee	1,118,640	172,150	1,290,790
This Mod. Increase	<u>176,454</u>	<u>-0-</u>	<u>176,454</u>
New Total Fixed Fee	<u>\$ 1,295,094</u>	<u>\$ 172,150</u>	<u>\$ 1,467,244</u>
Total Estimated Cost & Fixed Fee	<u>\$23,611,604</u>	<u>\$4,123,955</u>	<u>\$27,735,559</u>
Total Amount Obligated October 1, 1962			<u>\$27,735,559</u>

Contract articles should be changed to read as follows:

Article IV, paragraphs 1 and 2 should read:

1. Estimate of Cost and Fixed Fee - The presently estimated cost of the work under this contract is \$26,268,315 exclusive of the contractor's fixed fee. The contractor's fixed fee, as set forth in paragraph 2, Article V, of this contract, is \$1,467,244. The estimated cost of the work, as described in paragraph 1 of the Article entitled Scope of Work for the period October 1, 1962 to September 30, 1963, is \$3,075,546 exclusive of the contractor's fixed fee of \$176,454.

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~~FROM~~

J. S. Hopkins

- 7 -

OCT 1 1962

2. Obligation of Funds - The amount presently obligated by the Government with respect to this contract is \$27,735,559. The amount of obligation under this contract may be increased unilaterally by the Commission by written notice to the contractor and may be decreased by written agreement of the parties (whether or not by formal modification of this contract).

Add a new sub-paragraph (d) to paragraph 2 of Article V - Allowable Costs and Fixed Fee:

- (d) The fixed fee appreciable to the work performed during the period October 1, 1962 to September 30, 1963 is \$176,454.

Add a new sub-paragraph (d) to paragraph 20 of Article VI - Payments.

- (d) For the period October 1, 1962 through September 30, 1963 ninety per cent (90%) of the fixed fee of \$176,454 shall become due and payable in monthly installments of \$13,234.

cc: J. J. Wise, Mgr's Office
Hobbs/Donahue, T&P
R. A. Messick, B&F

~~SECRET~~
~~FROM~~

USDOE 017449

~~SECRET~~
Office Memorandum • UNITED STATES GOVERNMENT

TO : J. S. Hopkins, Director
Administrative Division

FROM : *Neil Johnson for*
A. Y. Morgan, Director
Budget & Finance Division

DATE: JAN 10 1963

UNCLASSIFIED

SUBJECT: REVIEW OF SYLCOR PROPOSAL OF DCF 2223-H DECEMBER 20, 1962
Document No. SR-*EB-911*

FB:MER:mp

This document consists of 4 pages.

We have reviewed Sylcor's revised proposal for the period ~~October 1,~~
1962 thru September 30, 1963 and submit the following as a sup-
plement, and where necessary, replacement for the information included
in my memo to you of October 1, 1962.

I. Comparison of Estimates:

	September 24 DCF 2165	December 20 DCF 2223	Change + or -
Mark V-B	\$ 2,003,446	\$2,452,435	\$448,989
Mark VII-A	437,886	448,486	10,600
Thorium	65,402	64,024	(1,378)
Development	285,776	298,496	12,720
Fabricated Equipment	221,700	185,300	(36,400)
Tooling	103,244	79,924	(23,320)
Purchased Equipment	134,546	167,200	32,654
Total Costs	<u>\$ 3,252,000</u>	<u>\$3,695,865</u>	<u>\$443,865</u>

II. Comments on Estimates:

Mark V-B

The increase in estimated costs of Mark V-B is the result of increases in production as follows:

Estimated Costs	\$ 2,003,446	\$2,452,435	\$448,989
Estimated Prod. Lbs.	949,600	1,243,200	293,600
Unit Cost	\$2.11	\$1.97	\$(.14)

As indicated above, Mark V-B production increases about 30% for the period with an increase in costs of only 22% which results in a decrease in unit cost.

Sylcor's estimated unit cost at the end of the contract period for Mark V-B is about \$1.85 per pound.

Mark VII-A

During the period October thru December 1962, Sylcor was scheduled to produce about 210 tons of Mark VII-A slugs. The question was raised in our review as to whether or not the

~~RESTRICTED DATA~~
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This document contains Restricted Data as defined in the Atomic Energy Act of 1954. The transmission or the disclosure of its contents in any manner to an unauthorized person is prohibited.

USDOE 017873

REMARKS ON REVISIONS AND DECLASSIFICATION STATUS

Deposition (Circle Number)

1. Classification Unchanged

2. Classification Changed to:

3. Classification Canceled

4. Other: CG-NMP-2 9-00

1st Review Date: 4/3/63

Authority: OAC UADD

Name: *Neil Johnson*

2nd Review Date: 4/3/63

Authority: ABO

Name: *Neil Johnson*

at (30-1)-125

210 tons produced during this period included any rework slugs which had been canned in a previous period and consequently a fee had been paid. N. J. Donahue assured us that none of the slugs canned in this contract period are reworked slugs from the previous contract period.

III. Redistribution of Costs

The increase in cost in Mark VII-A and changes in other activities except Mark V-B represent a redistribution of costs and are not considered scope changes. Excluding Mark V-B there is an actual savings to the Commission in fee as a result of the redistribution of costs in other activities as follows:

<u>Change in Fee Base</u>	
Fabricated Equipment	\$(36,400)
Du Pont Tooling	(22,000)
Thorium	1,300
Mark VII-A	10,000
Development	<u>12,000</u>
Net Change	<u>\$(35,100)</u> Fee @ 6% \$2,106

Overhead

Overhead costs in the revised estimates are about 101% of direct labor compared to an approved rate of 114% in the September 24 proposal. The "going rate" for overhead is about \$1,128,000 for the Hicksville Plant including about \$9,000 per month for OROO work. The "going rate" is about 104% of direct labor. The OROO work was discontinued after December 1962. Therefore, a slight increase in the overhead rate is expected for the SROO work during the period. The total revised estimated overhead for the period for SROO work is \$1,090,000.

The other items of cost are considered to be reasonable.

The following is a comparison of the estimates by type of expense.

~~SECRET~~

J. S. Hopkins

- 3 -

JAN 10 1963

	<u>Sept. 24</u>	<u>Dec. 20</u>	<u>Change + or -</u>
Direct Labor	\$ 928,700	\$1,073,100	\$144,400
Direct Materials	765,400	967,900	202,500
Overhead	1,053,100	1,089,500	36,400
G & A	193,800	198,500	4,700
Adjustments(Rounding)	(90)	(1,240)	(1,150)
Subtotal Fee Base	<u>2,940,910</u>	<u>3,327,760</u>	<u>386,850</u>
Fee @ 6%	176,454	199,665	23,211
Purchased Equipment	134,546	167,200	32,654
Add Back Adj.	90	1,240	1,150
Total Costs	<u>\$3,252,000</u>	<u>\$3,695,865</u>	<u>\$443,865</u>

The unit costs for V-B for direct labor and direct materials are about the same in both proposals.

Conclusion

Based on the above analysis and considering that Sylcor is in a transitional period of production going from Mark VII-A to Mark V-B and the OROO work is being phased out, a condition during which optimum costs are not expected to exist, we consider the proposal to be reasonable and acceptable. Sufficient funds are available in the FY 1963 Financial Plan to finance the increase in work at Sylcor.

Financial Information for Contract Modification (Will replace the comparable information in my October 1, 1962 memo):

Obligations

The obligations in the contract should be increased by \$3,658,104 computed as follows:

Estimated Costs 10/1/62-9/30/63	\$3,695,865
Estimated Underrun thru 9/30/62	(46,620)
Changes in Stores Inventories FY '63	(44,417)
Change in Working Capital FY 1963	3,276
Estimated Commitments 9/30/63	<u>50,000</u>
Total Est. Obligations for Period	<u>\$3,658,104</u>

Cover Sheet for Contract

The cover sheet of the contract should be changed to read as follows:

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USDOE 017875

~~SECRET~~

J. S. Hopkins

- 4 -

JAN 10 1963

	<u>SROO</u>	<u>NYOO</u>	<u>Total</u>
Previous Direct Cost Mod. 31	\$19,244,347	\$3,951,805	\$23,196,152
This Mod.(32) Increase	<u>3,458,439</u>	<u>-0-</u>	<u>3,458,439</u>
New Total Direct Costs	<u>\$22,702,786</u>	<u>\$3,951,805</u>	<u>\$26,654,591</u>
Previous Fixed Fee	\$ 1,118,640	\$ 172,150	\$ 1,290,790
This Mod. Increase	<u>199,665</u>	<u>-0-</u>	<u>199,665</u>
New Total Fixed Fee	<u>\$ 1,318,305</u>	<u>\$ 172,150</u>	<u>\$ 1,490,455</u>
Total Est. Cost and Fixed Fee	<u>\$24,021,091</u>	<u>\$4,123,955</u>	<u>\$28,145,046</u>
Total Obligated 2/1/63			<u>\$28,145,046</u>

Article IV, paragraph 1 and 2 should read:

1. Estimate of Cost and Fixed Fee - The presently estimated cost of the work under this contract is \$26,654,591 exclusive of the contractor's fixed fee. The contractor's fixed fee as set forth in paragraph 2, Article V, of this contract is \$1,490,455. The estimated cost of the work as described in paragraph 1 of the Article entitled Scope of Work for the period October 1, 1962 to September 30, 1963 is \$3,496,200 exclusive of the contractor's fixed fee of \$199,665.
2. Obligation of Funds - The amount presently obligated by the Government with respect to this contract is \$28,145,046. The amount of obligation under this contract may be increased unilaterally by the Commission by written notice to the contractor and may be decreased by agreement of the parties (whether or not by formal modification of this contract).

Add a new sub-paragraph (d) to paragraph 2 of Article V - Allowable Costs and Fixed Fee:

- (d) The fixed fee applicable to the work performed during the period October 1, 1962 to September 30, 1963 is \$199,665.

Add a new sub-paragraph (d) to paragraph 2 of Article VI - Payments:

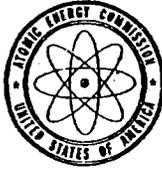
- (d) For the period October 1, 1962 through September 30, 1963, ninety per cent (90%) of the fixed fee of \$199,665 shall become due and payable in monthly installments of \$14,975.

J. J. Wise/Mgr's Office
Hobbs/Donahue, T&P
Messick, B&F
Stark, B&F

CC:

USDOE 017876

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

DEC 7 1962

938 12/10/62

MEMORANDUM FOR CHAIRMAN SEABORG
COMMISSIONER HAWORTH
COMMISSIONER PALFREY
COMMISSIONER RAMEY
COMMISSIONER WILSON

Acting
THROUGH GENERAL MANAGER *MSJ*

SUBJECT: EXTENSION OF CONTRACT AT(30-1)-1293 WITH SYLVANIA ELECTRIC
PRODUCTS, INC.

The purpose of this memorandum is to bring to your attention the proposed extension of Contract No. AT(30-1)-1293 with Sylvania Electric Products, Inc. This contract has been submitted for Headquarters review and approval by the Savannah River Operations Office pursuant to AECPR 9-51.102(1) at my request since total contract costs to date exceed \$10 million and this is the first opportunity under the current AEC policy to have this contract reviewed and brought to the attention of the Commission. The total estimated cost of this proposed modification, including fixed fee, is \$3,248,617 which will bring the total estimated cost, including fee, of the contract to \$27,735,559.

Contract AT(30-1)-1293 was entered into with Sylvania Electric Products, Inc. by the New York Operations Office as a development contract effective December 10, 1951. This contract was transferred from NYOO to SROO effective July 1, 1954. The current scope of the contract provides that the contractor shall proceed with the machining, manufacture, canning, testing, inspection and delivery of metal and alloy slugs to the Commission and perform other services as required by the Commission. The general scope of work performed by Sylvania has been essentially the same since the contract was transferred to the Savannah River Plant for administration. The services of the contractor were originally procured by the Commission by negotiations under a cost-plus-fixed-fee arrangement.

The plant and buildings at the Hicksville, New York, Plant constituting the manufacturing facility are owned by the contractor, and the equipment utilized in the performance of SROO work is owned by the Commission. To relocate this equipment to another contractor's plant or to tool up another contractor's

*DOE - History Division
Sutland Materials - AEC
Accession # 326-76-0006
Job 6540
Box 70*

*F O= M 2- office of contract
Blicy January 1962 - December 1962*

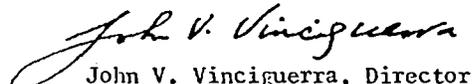
USDOE 017912

plant for production of fuel elements would be extremely costly to the Commission. Sylvania possesses the only known capability outside SRP in the hot-pressed bonding techniques. This coupled with the fact that Sylvania has over a ten-year period of operation developed production know-how, techniques and trained personnel in the manufacturing of fuel elements which would not be possessed or readily available from a new contractor precludes consideration of obtaining a suitable replacement contractor.

The proposed modification will extend the contract term through September 30, 1963, and extend the AEC option to renew the contract annually through September 30, 1967. A 6% fee of \$176,454 on a fee base of \$2,941,000 has been negotiated with the contractor for the period October 1, 1962, through September 30, 1963. Such fee appears reasonable, is in line with fee rates previously paid to Sylvania and is within AEC fee policy.

Therefore, I propose to authorize the extension of this contract through September 30, 1963. At the same time, the terms and conditions of this contract will be up-dated consistent with AECPR requirements.

In addition to the Division of Contracts, the Divisions of Production, Labor Relations, and Industrial Participation and the Offices of the Controller and the General Counsel concur in the proposed extension.


John V. Vinciguerra, Director
Division of Contracts

DEC 26 1962

CONTRACT AT-(30-1)-1293

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

THIS MODIFICATION, entered into as of the 19th day of December, 1962, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC., SYLOR DIVISION (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into a certain agreement known and designated as Sponsored Task CH-4 (hereinafter called the "Agreement"), such Agreement having been entered into on July 1, 1959, and having been modified heretofore by Modifications Nos. 1 - 11; and

WHEREAS, the parties hereto desire to modify said Agreement further as herein provided;

NOW, THEREFORE, the parties hereto agree that the Agreement, as heretofore modified, is hereby modified further in the following particulars, but in no others:

1. The following new subparagraph is added to Paragraph 1, Description of Work:

"Notwithstanding the preceding subparagraph, during the period December 1, 1962, through January 31, 1963, the Contractor shall proceed with the final machining of semifinished Mark VII-A cores and the close-out activities required to complete Sponsored Task CH-4, as heretofore provided in the Agreement and in accordance with the Contractor's letter dated November 30, 1962, and the letter dated November 27, 1962, from C. L. Karl, Area Manager of the Commission's Cincinnati Area Office to the Contractor, which letters are hereby incorporated herein by reference."

2. The fixed fee specified in Paragraph 3 is hereby increased by \$1,210.00 as a result of the work added thereby.

3. The completion date of the work stated in Paragraph 4 is changed to January 31, 1963.

NARA-SE
Series 16-Oak
Ridge Contract
File
Box 4-178-18

NARA 001816

4. The amount obligated by Paragraph 5 is increased by \$21,390.00 as a result of the work added thereby. The revised amount of the Agreement is now as follows:

	<u>Estimated Cost</u>	<u>Fixed Fee</u>	<u>Total</u>
Obligated thru Modification No. 11	\$1,165,802.00	\$71,774.00	\$1,237,576.00
This Modification No. 12	<u>20,180.00</u>	<u>1,210.00</u>	<u>21,390.00</u>
	\$1,185,982.00	\$72,984.00	\$1,258,966.00

Except as otherwise provided in this modification, all the provisions of the Agreement as heretofore modified or supplemented shall remain in full force and effect.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS OFFICE

BY:

R. C. Murphy
R. C. Murphy
TITLE: Director, Contract Division

WITNESSES:

Eric Selden
Richard E. O'Neil
(Address)
Mike Fall
W. Charles, Jr.
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.
SYLCOR DIVISION

BY:

D. B. Metz
D. B. Metz
TITLE: Manufacturing Manager

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

January 18, 1963

Randall O. Erdley, Chief
Savannah River Patent Group

MODIFICATION NO. 12 TO SPONSORED TASK NO. CH-4 UNDER
CONTRACT AT(30-1)-1293

CP:RGE:cm

This is to advise that by the subject modification effective
December 19, 1962 the fixed fee has been increased by
\$1,210.00 from \$71,774.00 to \$72,984.00 and the completion
date of the work has been extended to January 31, 1963.

OFFICE ▶	Patent Br.					
SURNAME ▶	RGE.					
DATE ▶	1-18-63					

File

Those Listed Below

February 12, 1963

R. A. McFeely, Chief of Contracts
Contracts and Procurement Branch
Administrative Division
APPENDIX "A" - CONTRACT AT(30-1)-1293 WITH SYLVANIA ELECTRIC
PRODUCTS INC.

AC:RAF:ps

Attached for your information and file are revised pages 17
and 21 of Appendix "A," Contract AT(30-1)-1293 with Sylvania
Electric Products Inc.

Attachments:
As stated

Addressees:
B&F Division (4 cys.)
Engineering Division (1 cy.)
Security Division (1 cy.)
T&P Division (2 cys.)
Office of Chief Counsel (1 cy.)
Patent Branch, OCC (1 cy.)
Audit Branch, B&F (1 cy.)
Procurement, C&P Branch, Adm. Div. (1 cy.)

Supplement - report on

*M. J. [unclear]
[unclear]
[unclear]*

SCHEDULE I

SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Contract Administrator Equipment Designer, Sr. Purchasing Agent "A" Senior Engineer "B" Supervisor of Security and Administrative Service Supervisor of Maintenance "B" Toolroom Foreman Foreman Class I Tool Coordinator	6 J	\$ 567 - \$940
Buyer Cost Analyst & Statistician Supervisor of An Accounting Department Section	5 K	544 - 870
Engineer Foreman, Nuclear Products Industrial Engineer Accountant, Senior Technical Foreman II Personnel Assistant Systems and Procedures Analyst, Jr. Equipment Designer	4 K	497 - 795
Cost Accountant	3 K	452 - 725

General Wage Increase - Effective
August 13, 1962, raised maximum of
monthly salary ranges

SCHEDULE II

HOURLY EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Hourly Salary Range</u>
Armed Guard	LG 7	\$2.21 - \$2.66
Armed Courier		
Storekeeper		
Machinist "C"		
Inspector "C"		
Chemical Room Operator		
Machining Operator-CPP		
Sodium Loading Dry Box Operator		
Briquetting Operator		
Heat Treatment Operator		
Hot Pressing Operator-VB		
Welding Operator		
Machining Operator-VB		
Fluoroscope Operator		
Hot Press Operator		
Finishing Operator		
Maintain Chemical Solutions		
Materials Stock Clerk	LG 6	2.09 - 2.50
Mechanic "C"		
Maintain Chemical Solutions		
Canning-Hot Press Operator		
Canning-Assembler		
Die Processing Operator		
Machining Operator-AEC		
Plating Machine Operator		
Fabrication Operator		
Rack Maintenance Man		
Groundskeeper	LG 5	1.97 - 2.35
Trainee, Production		
Maintenance Apprentice	LG 4	1.86 - 2.21
Cafeteria-Dishwasher, Porter	LG 3	1.76 - 2.08
Janitor-Porter		

General Wage Increase - Effective
 September 3, 1962

A

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 32
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO Expand scope of work and amend other
provisions of the Contract.

EFFECTIVE DATE October 1, 1962

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>SROO</u>	<u>NYOO</u>	<u>TOTAL</u>
Previous Direct Cost (Modification No. 31)	\$19,244,347	\$3,951,805	\$23,196,152
This Modification (Net Increase) <u>a/</u>	<u>3,458,439</u>	<u>-0-</u>	<u>3,458,439</u>
New Total Direct Cost	<u>\$22,702,786</u>	<u>\$3,951,805</u>	<u>\$26,654,591</u>
Previous Fixed Fee (Modification No. 31)	\$ 1,118,640	\$ 172,150	\$ 1,290,790
This Modification (Net Increase)	<u>199,665</u>	<u>-0-</u>	<u>199,665</u>
New Total Fixed Fee	<u>\$ 1,318,305</u>	<u>\$ 172,150</u>	<u>\$ 1,490,455</u>
Total Estimated Cost and Fixed Fee	<u>\$24,021,091</u>	<u>\$4,123,955</u>	<u>\$28,145,046</u>
Total Amount Obligated as of February 1, 1963			<u>\$28,145,046</u>

a/ Includes an adjustment for underruns through September 30, 1962, and for estimated changes in stores inventories and working capital in Fiscal Year 1963.

A. E. C. FILE COPY

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into this 18th day of February, 1963, effective October 1, 1962, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December, 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and,

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to provide for the performance by the Contractor of an additional scope of work and to amend certain provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended:

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In paragraph 1., Principal Site, of Article II - SITE OF WORK, delete the date "October 1, 1961," appearing in the seventh line and substitute therefor the date "October 1, 1962."
2. In paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, delete the date "September 30, 1962," appearing in the second line and the date "September 30, 1964," appearing in the fifth and sixth lines, and substitute therefor the dates "September 30, 1963," and "September 30, 1967," respectively.
3. In subparagraph (d)(i) of paragraph 2., Termination, of Article III - TERM, EXPIRATION AND TERMINATION, substitute the date "September 30, 1967," for the date "September 30, 1964." Delete line 14 reading "except as otherwise provided in paragraph 1. of Article XIX - INDEMNITY," in its entirety.
4. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$26,654,591, exclusive of the Contractor's fixed fee. The Contractor's fixed fee, as set forth in paragraph 2., Article V, of the Contract is \$1,490,455. The estimated cost of the work, as described in paragraph 1. of the Article entitled SCOPE OF WORK for the period October 1, 1962, to September 30, 1963, is \$3,496,200, exclusive of the Contractor's fixed fee of \$199,665."
5. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, delete the figure "\$24,486,942" and substitute therefor the figure "\$28,145,046."

6. The following new subparagraph (d) is added to paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE:

"(d) The fixed fee applicable to work performed during the period October 1, 1962, to September 30, 1963, is \$199,665."

7. The following new subparagraph (d) is added to paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS:

"(d) For the period October 1, 1962, through September 30, 1963, ninety per cent (90%) of the fixed fee of \$199,665 shall become due and payable in monthly installments of \$14,975."

8. In subparagraph (c) of paragraph 10., of Article VII - GOVERNMENT PROPERTY, delete the date "September 30, 1964," appearing in the fourth line and substitute therefor the date "September 30, 1967."

9. Article XIX - INDEMNITY is deleted in its entirety.

10. Article VII - EXECUTIVE COMPENSATION, of Appendix "A" of the Contract is amended to read as follows:

"VII. EXECUTIVE COMPENSATION

"Executive compensation including bonuses and other remunerations will, for cost-reimbursement purposes, not exceed a pro rata share of the equivalent of \$30,000 per annum for any one executive. The determination of allowable related costs based on compensations paid will also be determined on the basis of the foregoing limitation. Prior Commission approval shall be obtained on the establishment or adjustment of single rates or rate ranges and on individual salary actions which would result in total annual compensation, including incentive compensation, of \$25,000 or more."

11. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is further amended as of October 1, 1962, and is attached hereto and made a part hereof.
12. Appendix "E," General Provisions, to Contract AT(30-1)-1293 is amended to include the following new provisions:

"23. SMALL BUSINESS SUBCONTRACTING PROGRAM

"(a) The Contractor agrees to establish and conduct a small business subcontracting program which will enable small business concerns to be considered fairly as subcontractors and suppliers under this Contract. In this connection, the Contractor shall:

- (1) Designate a liaison officer who will (i) maintain liaison with the Government on small business matters, (ii) supervise compliance with the Utilization of Small Business

Concerns clause, and (iii) administer the Contractor's "Small Business Subcontracting Program."

- (2) Provide adequate and timely consideration of the potentialities of small business concerns in all "make-or-buy" decisions.
- (3) Assure that small business concerns will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of small business concerns. Where the Contractor's lists of potential small business subcontractors are excessively long, reasonable effort shall be made to give all such small business concerns an opportunity to compete over a period of time.
- (4) Maintain records showing (i) whether each prospective subcontractor is a small business concern, (ii) procedures which have been adopted to comply with the policies set forth in this clause, and (iii) with respect to the letting of any subcontract (including purchase orders) exceeding \$10,000, information substantially as follows:
 - (A) Whether the award went to large or small business.
 - (B) Whether less than three or more than two small business concerns were solicited.
 - (C) The reason for non-solicitation of small business if such was the case.
 - (D) The reason for small business failure to receive the award if such was the case when small business was solicited.

The records maintained in accordance with (iii) above may be in such form as the Contractor may determine, and the information shall be summarized quarterly and submitted by the purchasing department of each individual plant or division to the Contractor's cognizant small business liaison officer. Such quarterly summaries will be considered to be management records only and need not be submitted routinely to the Government; however, records maintained pursuant to this clause will be kept available for review.

- (5) Notify the Contracting Officer before soliciting bids or quotations on any subcontract (including purchase orders) in excess of \$10,000 if (i) no small business concern is to

Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

be solicited, and (ii) the Contracting Officer's consent to the subcontract (or ratification) is required by a "Subcontracts" clause in this Contract. Such notice will state the Contractor's reasons for non-solicitation of small business concerns, and will be given as early in the procurement cycle as possible so that the Contracting Officer may give SBA timely notice to permit SBA a reasonable period to suggest potentially qualified small business concerns through the Contracting Officer. In no case will the procurement action be held up when to do so would, in the Contractor's judgment, delay performance under the Contract.

- (6) Include the Utilization of Small Business Concerns clause in subcontracts which offer substantial small business subcontracting opportunities.
 - (7) Cooperate with the Contracting Officer in any studies and surveys of the Contractor's subcontracting procedures and practices that the Contracting Officer may from time to time conduct.
 - (8) Submit such information on subcontracting to small business concerns as is called for by the Contracting Officer.
- (b) A "small business concern" is a concern that meets the pertinent criteria established by the Small Business Administration and set forth in Section 1-1.701 of the Federal Procurement Regulations.
- (c) The Contractor agrees that, in the event he fails to comply with his contractual obligations concerning the small business subcontracting program, this Contract may be terminated, in whole or in part, for default.
- (d) The Contractor further agrees to insert, in any subcontract hereunder which may exceed \$500,000 and which contains the Utilization of Small Business Concerns clause, provisions which shall conform substantially to the language of this clause, including this paragraph (d), and to notify the Contracting Officer of the names of such subcontractors."

"24. LABOR SURPLUS AREA SUBCONTRACTING PROGRAM

- "(a) The Contractor agrees to establish and conduct a program which will encourage labor surplus area concerns to compete for subcontracts within their capabilities. In this connection, the Contractor shall:

Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

- (1) Designate a liaison officer who will (i) maintain liaison with duly authorized representatives of the Government on labor surplus area matters, (ii) supervise compliance with the Utilization of Concerns in Labor Surplus Areas clause, and (iii) administer the Contractor's "Labor Surplus Area Subcontracting Program;"
 - (2) Provide adequate and timely consideration of the potentialities of labor surplus area concerns in all "make-or-buy" decisions;
 - (3) Assure that labor surplus area concerns will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of labor surplus area concerns;
 - (4) Maintain records showing procedures which have been adopted to comply with the policies set forth in this clause; and
 - (5) Include the Utilization of Concerns in Labor Surplus Areas clause in subcontracts which offer substantial labor surplus area subcontracting opportunities.
- (b) A "labor surplus area concern" is a concern which will perform, or cause to be performed, a substantial proportion of any contract awarded to it in "Areas of Substantial Labor Surplus" (also called "Areas of Substantial Unemployment"), as designated by the Department of Labor. A concern shall be deemed to perform a substantial proportion of a contract in a labor surplus area if the costs that the concern will incur on account of manufacturing or production performed in persistent or substantial labor surplus areas (by itself or its first-tier subcontractors) amount to more than 50 percent of the price of such contract.
- (c) The Contractor further agrees to insert, in any subcontract hereunder which may exceed \$500,000 and which contains the Utilization of Concerns in Labor Surplus Areas clause, provisions which shall conform substantially to the language of this clause, including this paragraph (c), and to notify the Contracting Officer of the names of such subcontractors."

10. All other terms and conditions of the Contract remain unchanged.

Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF the parties hereto have executed this Modification as of
the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: [Signature]
R. C. Blair, Manager
TITLE: Savannah River Operations Office

Blair
RCB
SR
NY

WITNESSES:

[Signature]
Hicksville Ny
(Address)
[Signature]
Hicksville Ny
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

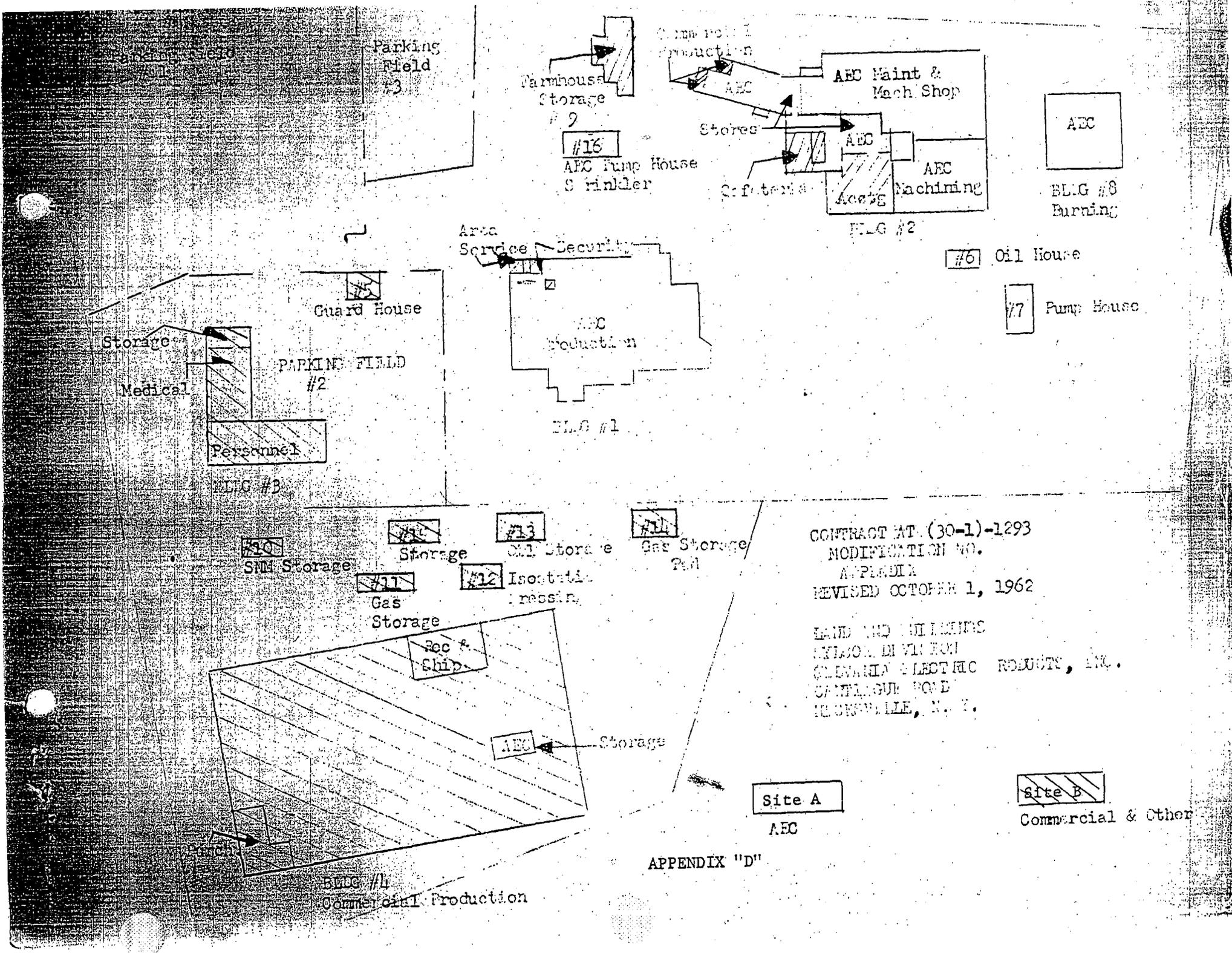
BY: [Signature]
D. B. Metz
TITLE: Manufacturing Manager
Sylcor Division

I, J. M. TOOHER, certify that I am ASST. SECRETARY
of Sylvania Electric Products Inc., named above; that D. B. METZ
who signed this Agreement on behalf of said corporation, was then _____
MFG. MGR. SYLCOR DIV. of said corporation, and that this Agreement was
duly signed for and in behalf of said corporation by authority of its governing
body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 4 day of FEB,
1963.

CORPORATE SEAL

[Signature]
J. M. Toohar
Assistant Secretary



CONTRACT AT. (30-1)-1293
 MODIFICATION NO.
 APPENDIX
 REVISED OCTOBER 1, 1962

LAND AND BUILDINGS
 DIVISION
 GEORGIA ELECTRIC PRODUCTS, INC.
 CANTONMENT ROAD
 MARIETTA, N. Y.

Site A
 AEC

Site B
 Commercial & Other

APPENDIX "D"

B

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 32

Supplemental Agreement to

Contract No. AT(30-1)-1293

SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into this 18th day of February, 1963, effective October 1, 1962, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December, 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and,

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to provide for the performance by the Contractor of an additional scope of work and to amend certain provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended:

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In paragraph 1., Principal Site, of Article II - SITE OF WORK, delete the date "October 1, 1961," appearing in the seventh line and substitute therefor the date "October 1, 1962."
2. In paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, delete the date "September 30, 1962," appearing in the second line and the date "September 30, 1964," appearing in the fifth and sixth lines, and substitute therefor the dates "September 30, 1963," and "September 30, 1967," respectively.
3. In subparagraph (d)(1) of paragraph 2., Termination, of Article III - TERM, EXPIRATION AND TERMINATION, substitute the date "September 30, 1967," for the date "September 30, 1964." Delete line 14 reading "except as otherwise provided in paragraph 1. of Article XIX - INDEMNITY," in its entirety.
4. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$26,654,591, exclusive of the Contractor's fixed fee. The Contractor's fixed fee, as set forth in paragraph 2., Article V, of the Contract is \$1,490,455. The estimated cost of the work, as described in paragraph 1. of the Article entitled SCOPE OF WORK for the period October 1, 1962, to September 30, 1963, is \$3,496,200, exclusive of the Contractor's fixed fee of \$199,665."
5. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, delete the figure "\$24,486,942" and substitute therefor the figure "\$28,145,046."

USDOE 017282

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11. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is further amended as of October 1, 1962, and is attached hereto and made a part hereof:

12. Appendix "E," General Provisions, to Contract AT(30-1)-1293 is amended to include the following new provisions:

"23. SMALL BUSINESS SUBCONTRACTING PROGRAM

"(a) The Contractor agrees to establish and conduct a small business subcontracting program which will enable small business concerns to be considered fairly as subcontractors and suppliers under this Contract. In this connection, the Contractor shall:

- (1) Designate a liaison officer who will (i) maintain liaison with the Government on small business matters, (ii) supervise compliance with the Utilization of Small Business

Concerns clause, and (iii) administer the Contractor's "Small Business Subcontracting Program."

- (2) Provide adequate and timely consideration of the potentialities of small business concerns in all "make-or-buy" decisions.
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Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

be solicited, and (ii) the Contracting Officer's consent to the subcontract (or ratification) is required by a "Subcontracts" clause in this Contract. Such notice will state the Contractor's reasons for non-solicitation of small business concerns, and will be given as early in the procurement cycle as possible so that the Contracting Officer may give SBA timely notice to permit SBA a reasonable period to suggest potentially qualified small business concerns through the Contracting Officer. In no case will the procurement action be held up when to do so would, in the Contractor's judgment, delay performance under the Contract.

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Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

- (1) Designate a liaison officer who will (i) maintain liaison with duly authorized representatives of the Government on labor surplus area matters, (ii) supervise compliance with the Utilization of Concerns in Labor Surplus Areas clause, and (iii) administer the Contractor's "Labor Surplus Area Subcontracting Program;"
 - (2) Provide adequate and timely consideration of the potentialities of labor surplus area concerns in all "make-or-buy" decisions;
 - (3) Assure that labor surplus area concerns will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of labor surplus area concerns;
 - (4) Maintain records showing procedures which have been adopted to comply with the policies set forth in this clause; and
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- (b) A "labor surplus area concern" is a concern which will perform, or cause to be performed, a substantial proportion of any contract awarded to it in "Areas of Substantial Labor Surplus" (also called "Areas of Substantial Unemployment"), as designated by the Department of Labor. A concern shall be deemed to perform a substantial proportion of a contract in a labor surplus area if the costs that the concern will incur on account of manufacturing or production performed in persistent or substantial labor surplus areas (by itself or its first-tier subcontractors) amount to more than 50 percent of the price of such contract.
- (c) The Contractor further agrees to insert, in any subcontract hereunder which may exceed \$500,000 and which contains the Utilization of Concerns in Labor Surplus Areas clause, provisions which shall conform substantially to the language of this clause, including this paragraph (c), and to notify the Contracting Officer of the names of such subcontractors."

10. All other terms and conditions of the Contract remain unchanged.

Modification No. 32
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, Savannah River Operations
Office

WITNESSES:

SYLVANIA ELECTRIC PRODUCTS INC.

/s/ Grace Golden

BY: /s/ D. B. Metz

Hicksville, New York
(Address)

TITLE: Manufacturing Manager
Sylcor Division

/s/ Milton Boll

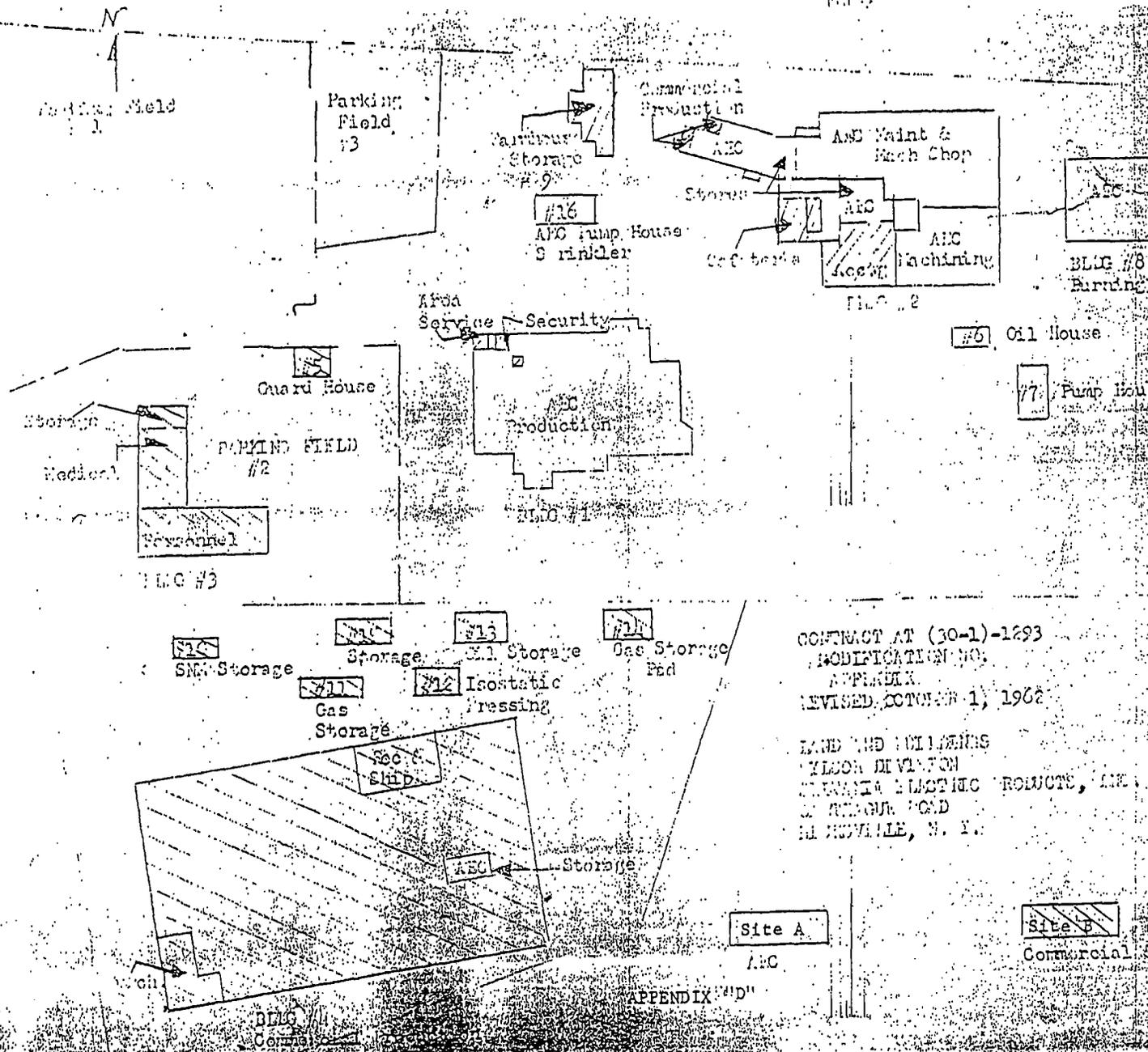
Hicksville, New York
(Address)

I, J. M. Toohar, certify that I am Assistant Secretary of Sylvania Electric Products Inc., named above; that D. B. Metz who signed this Agreement on behalf of said corporation, was then Manufacturing Manager, Sylcor Division of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers..

WITNESS my hand and seal of said corporation this 4th day of February, 1963.

/s/ J. M. Toohar
Assistant Secretary

CORPORATE SEAL



CONTRACT AT (30-1)-1293
 MODIFICATION NO.
 APPENDIX
 REVISED OCTOBER 1, 1962

LAND AND BUILDINGS
 WILSON DIVISION
 CHRYSLER PLASTIC PRODUCTS, INC.
 25 BRIDGE ROAD
 BRIDGEVILLE, N. Y.

APPENDIX "D"

UNITED STATES GOVERNMENT

Memorandum

TO : Those Listed Below

DATE: February 19, 1963

FROM : R. A. McFeely, Chief of Contracts
Contracts and Procurement Branch
Administrative Division

SUBJECT: MODIFICATION NO. 32 TO CONTRACT AT(30-1)-1293 WITH
SYLVANIA ELECTRIC PRODUCTS INC.

AC:RAF:ps

Attached for your use are signed and/or conformed copies, as indicated, of the subject modification. Appendix "B" of the modification sets forth the scope of work to be followed and is classified. Therefore, this appendix has been detached from conformed copies for normal distribution purposes.

Attachments:
As stated

Addressees:

B&F Division (1 signed, 3 conformed)
O&P Division (1 conformed)
Engineering Division (1 conformed)
Security Division (1 conformed)
T&P Division (2 conformed - including Appendix "B" (1 cy.)
Office of Chief Counsel (1 conformed - including Appendix "B")
Patent Branch, OCC (1 conformed - including Appendix "B")
Audit Branch, B&F (1 conformed)
Procurement, C&P Branch, Adm. Division (1 conformed)

Document transmitted herewith contains

~~RESTRICTED DATA~~
~~RESTRICTED DATA~~

When separated from enclosures handle
this document as UNCLASSIFIED

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USDOE 017280

UNCLASSIFIED

~~SECRET~~

February 27, 1963

DCF# 2260-H

Mr. R. C. Blair, Manager
U. S. Atomic Energy Commission
Savannah River Operations Office
P. O. Box "A"
Aiken, South Carolina

This document consists of 3 pages.
No. 2 of 4 copies, Series A

Attention: Mr. N. J. Donahue

Gentlemen:

Reference is made to your letter of 2-20-63, (SR-TM-9424). We are pleased to submit the requested proposal covering revisions to the scope of work for the period March 1, 1963 through September 30, 1963.

The new total costs for this period are \$2,319,200, including fee. In addition to the revised production programs, the costs cover continuation of current development programs as detailed in our proposal DCF# 2165-H and additional new work as outlined below.

As authorized by your letter, we have adjusted the production schedules for the Mark V-B IF and Mark V-E IF programs to effectively utilize manpower and equipment and to minimize employee recruiting later in the contract period. By advancing the Mark V-B schedule, we make it possible to initiate Mark V-E production with minimum new employment while retaining trained and experienced personnel.

This proposed Mark V-B IF schedule exceeds the cumulative deliveries required by SR-TM-9424. The Mark V-E IF schedule adjustment is necessitated by the fact of our annual vacation shutdown during July. These schedules (units in tons) follow:

<p>RESTRICTED DATA</p> <p>THIS DOCUMENT CONTAINS RESTRICTED DATA UNLESS INDICATED OTHERWISE IN THE TRANSMITTAL REPRODUCTION OF ITS CONTENTS IN ANY MANNER BY ANY PERSON IS PROHIBITED.</p>	<p>DEPARTMENT OF ENERGY SAVANNAH RIVER DECLASSIFICATION REVIEW</p> <p>1st Review Date: 4/5/83 Authority: SAC UADD Name: J. Black 2nd Review Date: 4/5/83 Authority: ADP Name: William J. Donahue</p>	<p>Determination (Circle Number)</p> <p>1. Classification Unchanged 2. Classification changed to:</p> <p><input checked="" type="checkbox"/> Classification Cancelled Other: CG-NRP-2 9-00</p>
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UNCLASSIFIED

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USAEC

-3-

February 27, 1963

May we state that we are pleased to submit this proposal for your consideration. We hope you find it satisfactory. We are available to meet with your staff at their convenience should further discussion be desirable.

Very truly yours,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS, INC.



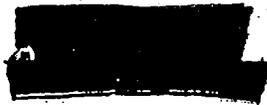
D. B. Metz
Manufacturing Manager

DEM/bm

~~SECRET~~

USDOE-017896

A



This document consists of 2 pages
 No. / of copies. *4*

DECLASSIFICATION REVIEW	
1st Review Date: <i>4/28/04</i>	Determination (Circle Number)
Authority: <i>ADD</i>	1. Classification Unchanged
2nd Review Date: <i>4/28/04</i>	2. Classification Changed To:
Name: <i>R. Collins</i>	3. Classification Cancelled
	4. Other: <i>CG-NMP-1 9/00</i>

SR-A-139

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED MARCH 1, 1963, UNDER
 MODIFICATION NO. 33

The scope of work to be performed by the Contractor during the period October 1, 1962, through September 30, 1963, as set forth by Modification No. 32, is revised to read as follows:

1. MARK VII-A - MARK V-B AND MARK V-E (Inner-Fuel)

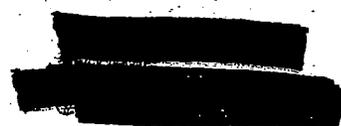
- a. The Contractor shall manufacture and furnish to the Commission Mark VII-A, Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark VII-A (Tons)	Mark V-B (Tons)		Mark V-E (Tons) Integral Rib
		Integral Rib	Ribless	
October 1962	70	10.2	0	0
November 1962	70	10.2	0	0
December 1962	70	10.2	6	0
January 1963	0	27.0	27	0
February 1963	0	38.0	27	0
March 1963	0	40.0	22	0
April 1963	0	57.0	0	0
May 1963	0	57.0	0	0
June 1963	0	57.0	0	0
July 1963	0	16.0	0	10
August 1963	0	40.0	0	22
September 1963	0	40.0	0	22

- b. The Contractor shall produce by November 29, 196 , 50 Mark V-B IF ribbed dummy slugs according to Du Pont Drawing SSK 4-3-222 using unplated stainless steel as the core material rather than uranium.

2. MARK V-B (Outer-Fuel)

Maintain Mark V-B outer-fuel element facilities in ready standby which shall include such minimum token operation as required to maintain capability. It is understood that minimum token operation will not exceed an average production of approximately 100 pieces per month. This program will be discontinued upon depletion of inventory in March 1963.



3. PROGRAM DEVELOPMENT

a. Mark V-E

Initiate development of a process for canning Mark V-E inner-fuel elements by the hot pressure bonding process. Contractor will conduct a program, using its best efforts, toward preparation of approximately 1,750 flow test, qualification, and reactor test pieces by June 1, 1963.

The program shall include the preparation of specifications and operating procedures for canning Mark V-E inner-fuel elements, including all necessary research development, canning and data accumulation. This program will also include the design of the necessary tooling and equipment for converting to a production program in either hot pressure bonding or hot die sizing process, whichever method is authorized by the Commission.

b. Hot Die Sizing

Continue investigation into the hot die sizing process of cladding Mark V-B inner-fuel elements to determine the feasibility and economic advantages, if any, of this method as a production process. Contractor shall design, procure and fabricate such equipment and tooling as is necessary to prepare test pieces, and conduct experimental procedures.

Also, the Contractor shall prepare specifications and operating procedures for canning V-B and Mark V-E inner-fuel elements in a production method, if possible. Further, Contractor shall design such tooling and equipment as is necessary to automate or mechanize the process evolved and to adapt this process to the Mark V-E fuel element when authorized by the Commission.

c. Nondestructive Testing

Investigate nondestructive techniques for the inspection of all fuel element cores and slugs processed at the Hicksville plant. The work under this program will consist of the following:

1. Continuation of work on the development of a method to detect the formation of a nickel-uranium eutectic in hot pressure bonded slugs.
2. Design of a positive nondestructive test for accurately distinguishing grain size and orientation of uranium after heat treatment and the incorporation of such test in the production line to permit inspection of 100 percent of the cores processed.

[REDACTED]

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED MARCH 1, 1963, UNDER
MODIFICATION NO. 33

3. Improvement of a test to measure nickel thickness on cores and the plating quality and the modification of the equipment so that it is applicable to Mark V-E size cores and can be incorporated into an automatic assembly operation.
4. Modification of bond testing equipment to cover Mark V-E size cores and the incorporation of bond testing into the planned automated inspection equipment.
5. Automation of recent developments in the field of nondestructive testing and the extension thereof to development and production programs on V-B, V-E, and hot die sizing.
6. Conduct preliminary development work on the feasibility of hot pressure bonding Zircaloy-2 cladding to uranium core specimens. Prepare on a best efforts basis, samples of direct zirconium to uranium bonding and samples of zirconium to uranium bonding, with a nickel-aluminum interface.

4. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

5. THORIUM

Complete the thorium program initiated under Modification No. 31 to the Contract. Strip Al cladding from approximately 2,500 pounds of reject Mark VII-T slugs. Machine and clad approximately 9,500 additional thorium metal slugs for delivery by September 30, 1963.

~~SECRET~~

J. J. Wise, Assistant Manager
for Administration

UNCLASSIFIED MAR 6 1963

A. Y. Morgan, Director
Budget & Finance Division

REVIEW OF SYLOR PROPOSAL DCF 2260-H

FB-926

FB:MER:ac

This document consists of 2 pages.

No. 3 of 6 copies, Series A

We have reviewed Sylcor's revised proposal for the period March-September 1963 and submit the following comments and recommendation:

Comments and Cost & Manpower Comparisons

The revised proposal in total is \$151,066 more than is currently approved to Sylcor for the period. The net change is as follows:

1. Classification (Circle Number)
 2. Classification (unchanged)
 3. Classification changed to:
 Classification Changed
 Class: CG-NM-3
 9.00

1st Review Date: 4/13/63
 Authority: [Signature]
 Name: [Signature]
 2nd Review Date: 4/13/63
 Authority: [Signature]
 Name: [Signature]

Expense Item	DCF-2223-H Currently Approved	DCF-2260-H Revised Proposal	Revised + or (-)
Direct Labor	\$ 617,070	\$ 662,430	\$ 45,360
Direct Materials	581,510	522,000	(59,510)
Overhead	633,590	695,000	61,410
G & A	118,290	119,300	1,010
Fee	116,473	119,369	2,896
Purchased Equipment	101,200	201,100	99,900
Total	<u>\$2,168,133</u>	<u>\$2,319,199</u>	<u>\$ 151,066</u>

Personnel			
Direct Man-Months	1,371	1,454	83
Indirect	154	154	-
Total	<u>1,525</u>	<u>1,608</u>	<u>83</u>

Program			
V-B	\$1,725,669	\$1,398,429	\$(327,240)
V-E	-	304,750	304,750
Development	173,310	149,566	(23,744)
Thorium	11,183	82,150	70,967
Equipment Fabrication	109,760	131,900	22,140
Tooling	47,011	50,032	3,021
U-Oxide	-	1,272	1,272
Equipment Purchased	101,200	201,100	99,900
Total	<u>\$2,168,133</u>	<u>\$2,319,199</u>	<u>\$ 151,066</u>

Production & Unit Cost			
Mark V-B Lbs.	932,000	658,000	(274,000)
Mark V-E Lbs.	-	108,000	108,000

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 by the Atomic Energy Commission. It is the property of the
 AEC and its use by an unauthorized person is prohibited.

~~SECRET~~

J. J. Wise

- 2 -

MAR 6 1963

<u>Unit Cost</u>	<u>DCF-2223-H</u> <u>Currently</u> <u>Approved</u>	<u>DCF-2260-H</u> <u>Revised</u> <u>Proposal</u>	<u>Revised</u> <u>+ or (-)</u>
V-B.	\$1.85	\$2.12	\$.27
V-E	-	2.82	2.82

Comments

1. Why should direct labor cost and estimated man-months increase when total production for the period is decreased by 83 tons of V-B & V-E and the only increase is for the 9,500 pieces of thorium? We can see no reason for an increase in direct labor.
2. It appears that SROO is absorbing all the overhead without a reduction since the OROO work has been discontinued. Total plant overhead for the seven month period ending January 30, 1963, was \$699,000. The SROO overhead for the period March-September 1963 is \$695,000. We can see no reason for the increase in overhead.
3. The increase in purchased equipment is for V-E.
4. The estimate for thorium canning is reasonable based on the cost incurred for the current batch processed.

Conclusion

In view of the SROO objective of obtaining more economical fuel elements, we recommend that Syloor be requested to take a closer look at their elements of cost and manpower with the objective of holding the unit cost of Mark V-B to no more than the current estimated cost. We have no basis for evaluating the unit cost of Mark V-E which is about 35% higher than the Mark V-B in the revised proposal.

cc: I. A. Hobbs, T&P
J. S. Hopkins, Adm.

~~SECRET~~

USDOE 017867

A

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office

FINDINGS AND DETERMINATION

Authorization for Modification of Cost-Plus-Fixed-Fee Contract

Sylcor Division
Sylvania Electric Products Inc.
Contract No. AT(30-1)-1293
Modification No. 35

The Atomic Energy Commission proposes to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc., to extend the term of the contract through September 30, 1964, and define the scope of work to be performed during the extended period.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering into an immediate unit price arrangement.
2. Program requirements are subject to immediate change.
3. Continuous process development is required.
4. The revised estimated cost (\$2,470,670) of the work under the contract is considered reasonable.
5. The proposed fixed fee of \$141,276 averages six percent (6%) of the estimated cost fee base and is considered fair. The fee was arrived at as a result of negotiations between the parties and is within the AEC fee curve limits.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee Supplemental Agreement, and I hereby authorize the use of said Supplemental Agreement.

BY: _____

H. L. Kilburn

H. L. Kilburn, Facility Manager

TITLE: Savannah River Operations Office

DATE: _____

JAN 21 1964

U. S. ATOMICS ENERGY COMMISSION
Savannah River Operations Office

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions of the
Contract.

EFFECTIVE DATE : October 1, 1963

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 34</u>	<u>Increase (Decrease)</u>	<u>Modification No. 35</u>
<u>Summary of Estimated Costs and Fixed Fee</u>			
<u>Operating Cost</u> ^{1/}	\$26,523,671	\$2,143,870	\$28,667,541
<u>Plant and Equipment (Beginning July 1, 1963)</u>	123,932	249,100 ^{2/}	373,032 ^{2/}
<u>Fixed Fee (Operations)</u>	<u>1,488,615</u>	<u>141,276</u>	<u>1,629,891</u>
<u>Total Estimated Costs and Fixed Fee</u>	<u>\$28,136,218</u>	<u>\$2,534,246</u>	<u>\$30,670,464</u>
<u>Commission Obligation (as of November 1, 1963)</u>			<u>\$29,326,218</u>

1/ Includes Plant and Equipment prior to July 1, 1963.

2/ Includes \$35,000 for first quarter FY 1965 authorizations not to be obligated in FY 1964.

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U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 28th day of February, 1964, effective October 1, 1963, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In Paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, the date "September 30, 1963," is deleted and the date "September 30, 1964," is substituted therefor.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,040,573, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,629,891. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1963, to September 30, 1964, is \$2,470,670, exclusive of the Contractor's fixed fee of \$141,276."
3. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$28,145,046" is deleted and the figure "\$29,326,218" is substituted therefor.

4. The following new subparagraph (e) is added to paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE:

"(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$141,276."
5. The following new subparagraph (e) is added to paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$141,276 shall become due and payable in monthly installments of \$10,595."
6. Item (c) Consulting Services of paragraph 4., Items of Allowable Cost, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(c) Consulting Services (including legal and accounting) and related expenses, as approved by the Contracting Officer, except as made unallowable by Item (y) of paragraph 5."
7. The following new subparagraph (y) is added to paragraph 5., Items of Unallowable Cost, of Article V - ALLOWABLE COST AND FIXED FEE:

"(y) Salaries or other compensation (and expenses related thereto) of any individual employed under this Contract as a consultant or in another comparable employment capacity who is an employee of another organization and concurrently performing work on a full-time basis for that organization under a cost-type contract with the Commission, except to the extent that cash payment therefor is required pursuant to the provisions of this Contract or procedures of the Commission applicable to the borrowing of such an individual from another cost-type contractor."
8. Appendix "A" Modification No. 29, as amended, is further amended as of October 1, 1963, and is attached hereto and made a part hereof.
9. Appendix "B" Modification No. 29, as amended, is further amended as of October 1, 1963, and is attached hereto and made a part hereof.
10. Provision 7., CONTRACTOR'S ORGANIZATION, of Appendix "E" General Provisions is revised to read as follows:

"7. CONTRACTOR'S ORGANIZATION

(a) Organization Chart. As promptly as possible after the execution of this Contract, the Contractor shall furnish to the Contracting Officer a chart showing the names, duties, and organization of

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

key personnel to be employed in connection with the work, and shall furnish from time to time supplementary information reflecting changes therein.

- (b) Supervising Representative of Contractor. Unless otherwise directed by the Contracting Officer, a competent full-time resident supervising representative of the Contractor, satisfactory to the Contracting Officer, shall be in charge of the work at the site at all times.
- (c) Control of Employees. The Contractor shall be responsible for maintaining satisfactory standards of employee competency, conduct and integrity and shall be responsible for taking such disciplinary action with respect to his employees as may be necessary. The Contractor shall establish such standards and procedures as are necessary to implement effectively the provisions set forth in Atomic Energy Commission Procurement Regulations 9-12.54 and such standards and procedures shall be subject to the approval of the Contracting Officer."

11. The following new General Provision No. 23 is added to Appendix "E" General Provisions of the Contract:

"23. Consultant or Other Comparable Employment Services of Contractor Employees

The Contractor shall require all employees who are employed full-time (an individual who performs work under the cost-type contract on a full-time basis) or part-time (50 percent or more of regular annual compensation received under terms of a contract with the Commission) on the Contract work to disclose to the Contractor all consultant or other comparable employment services which the employees propose to undertake for others. The Contractor shall transmit to the Contracting Officer all information obtained from such disclosures. The Contractor will require any employee who will be employed full-time on the Contract work to agree, as a condition of his participation in such work, that he will not perform consultant or other comparable employment services for another Commission cost-type Contractor under its Contract with the Commission except with the prior approval of the Contractor."

12. All other terms and conditions of the Contract remain unchanged.

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: [Signature]
R. C. Blair, Manager
TITLE: Savannah River Operations Office

Blair
Agm
[Signature]
[Signature]
[Signature]
[Signature]

WITNESSES:
[Signature]
Nicksville, N.Y.
(Address)

[Signature]
Nicksville N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: [Signature]
B. B. Metz
TITLE: Manufacturing Manager
Sylcor Division

I, J. M. T. O. H. C. C., certify that I am ASST. SECRETARY of Sylvania Electric Products Inc., named above; that D. B. METZ who signed this Agreement on behalf of said corporation, was then MFG. MGR. Sylcor Division of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 17 day of FEBRUARY 1964.

[Signature]

(CORPORATE SEAL)

H. Call-in Pay (Non-exempt Salaried and Hourly Employees)

Employees who are called in for emergency work outside their regularly scheduled hours may be paid at overtime rates for such hours worked or a minimum of four hours straight time, whichever is greater.

I. Separation Pay

1. Separation Pay in Lieu of Notice

Employees with six (6) months or more of continuous service who are permanently and involuntarily separated without prejudice will receive notice or separation pay in lieu of notice as indicated below:

- a. Hourly Employees - One (1) week's notice or one (1) week's pay at base rate, not to exceed 40 hours.

Should an hourly paid employee be separated because of lack of work while assigned to commercial work at the Hicksville Plant and "bump" through seniority rules an employee on Contract work, it is agreed the Commission shall not be liable for separation pay to the separated employee. Where an employee engaged on Contract work at the Hicksville Plant "bumps" a less senior employee assigned to commercial work, the Commission shall reimburse the Company, if required, for separation payments to the employee thus separated. In all instances where the Commission reimburses for separation pay to employees not engaged on its work at time of separation, payments must be approved by the Commission.

- b. Non-Exempt Salaried Employees - Two (2) weeks' pay and as much notice as possible. An additional one week's pay may be granted to employees having five (5) or more years of continuous service.

Separation pay to eligible employees whose total Company service has been divided between the Contractor's commercial activities and work under this Contract shall be prorated according to length of service on Contract work and the Company's commercial activities.

- c. Exempt Salaried Employees - Four (4) weeks pay or until the employee secures new employment for employees with up to five (5) years continuous service. An additional one (1) week's pay for each year, or portion thereof, of continuous service in excess of 5 years service or until the employee secures

Revised October 1, 1963

new employment except that in no instance shall the employee receive more than 15 weeks separation pay. Separation pay to eligible employees whose total Company service has been divided between the Contractor's commercial activities and work under this Contract shall be prorated according to length of service on Contract work and the Company's commercial activities.

2. Severance Pay - Hicksville Site Closing

Reimbursement will be made to the Company for severance payments only in the event that the Hicksville site is closed because of termination or expiration of this Contract. Severance payments made to employees whose total service has been divided between the Contractor's commercial work and work under this Contract shall be prorated according to the length of service on Contract work and commercial work. Employees whose employment is terminated because of the closing of the Hicksville site may receive severance pay in accordance with the sections of Sylvania Electric Products, Inc., Policy and Standard Practice entitled "Reassignment or Separation of Employees when a Plant or other Facility is Being Permanently Closed" and "Separation Policy-Plan 'A' Employees" further identified as No. 313. (Supplements 2 and 4) issued October 1, 1963.

IV. EMPLOYEE BENEFITS

A. Educational Benefits

When an employee is assigned to an educational course as part of his work under this Contract, the Contractor may pay the cost of the course, including books and required travel expenses.

Employees who elect to take educational courses may be reimbursed by the Contractor as outlined below.

1. The employee must obtain approval of the Plant Manager prior to enrolling in the course.
2. Upon completion of the course and before reimbursement for any part of the course cost is made, the employee shall provide acceptable evidence of successful completion and appropriate properly receipted bills.
3. If the course is directly related to the performance of Contract work, 100% tuition will be refunded upon satisfactory completion of the course.

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4. If the course is not directly related to the employee's present work but is related to the employee's development for higher level work in which there is a reasonable probability that he may be engaged under the Contract, 50% of the tuition may be refunded upon satisfactory completion of the course.
5. If the course is not directly related to Contract work but part of the requirement for a degree in a field directly related to the Contract work in which the employee is engaged, 50% of the tuition may be refunded upon satisfactory completion of the course.

In addition to the benefits outlined above, up to six hours time off per week with pay may be granted to employees who take approved graduate-level courses related to this Contract.

B. Group Insurance

The Contractor maintains group insurance program for all eligible and retired employees including: 1) life insurance, 2) accidental death and dismemberment insurance, 3) insurance for company travel, 4) hospital-surgical-medical insurance, 5) major medical insurance, and 6) non-occupational disability insurance, the details of which are on file and approved by the Commission. The Contractor's contribution to the cost of the program is reimbursable on a pro rata share basis as approved by the Commission. A proper share of dividends, premium refunds, and other credits accrued to the approved group insurance program will be credited to the cost of Contract work. The following group insurance programs are provided by the Contractor.

1. Life Insurance is provided for all regular employees at no cost to the employee after one month of Company service. The amount of insurance is determined by the employee's base rate of pay. The face value of the life insurance per eligible employee will be a minimum of \$3,000 and a maximum of \$225,000. Insurance coverage may be extended up to one year during a period an employee is totally disabled.
2. Accidental Death and Dismemberment Insurance is provided for all regular employees at no cost to the employee after one month of Company service. The amount of insurance is determined by the employee's base rate of pay, with a minimum of \$3,000 and a maximum of \$20,000 for any one accident. Insurance coverage may be extended up to one year during the period an employee is totally disabled.
3. Insurance for Company Travel is provided at no cost to the employee to cover death while an employee is traveling on, and as a result

Revised October 1, 1963

of, Company business. The amount of death insurance will be two times the employee's base annual salary, subject to a minimum of \$25,000 and a maximum of \$150,000.

4. Hospital-Surgical-Medical Insurance is provided for regular employees at no cost to the employee after one month of Company service. The insurance covers the employee and his dependents. Insurance coverage may be extended up to one year during a period an employee is totally disabled.
5. Major Medical Insurance is provided for all regular employees at no cost to the employee after one month of Company service. Major Medical Insurance is in addition to the basic Hospital-Surgical-Medical Insurance. Insurance coverage may be extended up to one year during a period an employee is totally disabled.
6. Non-Occupational Disability Insurance is provided to all employees at no cost to the employee immediately upon employment if the employee was a covered employee working for a covered employer within the preceding six months or after 28 calendar days of employment. Benefits under this plan begin eight (8) days after a non-occupational illness or injury. Payments under this policy are made in lieu of salary or wages in an amount equal to one-half of the normal weekly pay, but not to exceed \$65 per week. Benefits under this policy for any one accident or illness may not be paid for more than 26 weeks.

C. Pension Plan

A non-contributory Pension Plan is provided all employees of the Contractor, the details of which are filed with and approved by the Commission.

D. Savings and Security Plan

Regular employees with one year of continuous service may participate in a voluntary Savings and Security Plan as filed and approved by the Commission. Under the Plan participating employees contribute 3% of their earnings by payroll deductions and the Contractor contributes 6% of its net profits before Federal tax based on income for each year but not to exceed an amount equal to the total amount contributed by the members and not withdrawn during the year.

V. TRAVEL, TRANSPORTATION, SUBSISTENCE, AND MOVING EXPENSES

A. Travel, Transportation and Subsistence

Travel incurred by employees, consultants and prospective employees

Revised October 1, 1963

in connection with the performance of contract work may be reimbursed as follows:

1. The actual cost of transportation by common carrier, or \$.08 per mile plus highway, bridge, ferry and tunnel tolls when travel by vehicle is authorized.
2. The reasonable actual cost of lodging in accordance with prevailing locality rates plus an allowance not in excess of \$7.50 per day for subsistence.
3. The actual cost of necessary telephone calls, telegrams, and incidental transportation and personal expenses.

B. Moving and Relocation Expenses

Key scientific, technical and professional employees moving and relocation expenses to plants operated in connection with the performance of contract work may be reimbursed as follows:

1. Transportation expenses for an employee and dependents as in A. 1. above.
2. The reasonable actual cost of lodging plus a subsistence allowance not in excess of \$7.50 per employee, \$6.00 for each dependent over 12 years of age and \$4.00 for each dependent 12 years of age and under while enroute from place of permanent residence to transferred location.
3. A living expense allowance not to exceed \$9.00 per day for thirty (30) days to cover additional living expenses of an employee where family remains at principal place of permanent residence at time of transfer. In addition, the incurred cost of two (2) round trips from place of work to principal place of permanent residence during this period.
4. Reasonable travel expenses incurred by an employee's wife in making visits not in excess of two round trips to new location prior to transfer of residence with such expenses reimbursed in accordance with A.1., 2., and 3. above; or, if traveling with husband, in accordance with B.1., and 2. above.
5. Reasonable brokerage fees not to exceed 5% of sale price plus legal and other necessary closing fees in connection with the sale of principal place of permanent residence at the old location; or, a reasonable cancellation fee not to exceed the equivalent of three (3) months' rental in connection with the breaking of a lease on a

Revised October 1, 1963

rented house or apartment.

6. Legal fees and other unavoidable expenses not to exceed 3% of the purchase price in connection with the purchase of a residence at the new location.
7. The cost of real estate taxes, fire insurance, and interest on the mortgage on the old house not in excess of the equivalent of one month's payment when it is necessary for an employee to take title to a house in the new location without completing the sale and transfer of title to his house at the old location.
8. The reasonable cost of transportation of household goods and effects including packing, crating, insurance, unpacking, disconnecting and connecting equipment and for temporary storage of house hold goods and effects not in excess of thirty (30) days.
9. Incidental relocation expenses not to exceed 50% of one (1) month's base salary for an employee who owns and transfers household goods to the new location.
10. When at the Contractor's request an Exempt Plan A employee is transferred from another Sylvania location to the Hicksville site, reimbursement consistent with Sylvania commercial practice as defined in its Policy and Standard Practice Manual dated February 15, 1963, may be made for a loss sustained by the employee in the sale of his residence. It is understood that this policy shall be applied uniformly to all company Plan A employees and that reimbursement for such a loss is limited to its occurrence upon the transfer of an employee to the Hicksville site to perform work on Contract AT(30-1)-1293 and not applicable to its occurrence upon the transfer of an employee performing work on Contract AT(30-1)-1293 from the Hicksville site to another location. Reimbursement of any loss in excess of \$500 shall be subject to the Commission's prior approval.

C. New Hires - Key Scientific, Technical and Professional Employees

Travel and moving expenses incurred by new hires in connection with Contract work may be reimbursed as follows:

1. Transportation and moving expenses for an employee and dependents as in V.A.1., B.2., and B.8.
2. Reasonable cost of room and board for two weeks and reasonable travel expenses incurred by an employee or his wife in making visits not to exceed two round trips between new location and former residence if the new employee relocates before moving his

Revised October 1, 1963

family.

VI. MISCELLANEOUS EXPENSES AND ALLOWANCES

A. Pre-Employment Physical Examination

Reimbursements may be made for the expense of pre-employment physical examinations performed by a non-company physician when such examinations are necessary for the placement of an individual on Contract work. Such reimbursements will not exceed \$35 for any one individual.

B. In-Plant Training Courses

The reasonable costs of in-plant training courses deemed essential and of benefit to the performance of Contract work are approved as allowable Contract costs.

C. Outside Training and Meetings

When it is in the interest of the Contract for an employee to participate in outside training at the request of the Contractor or attend scientific, technical, or professional meetings, the cost of such training or attendance is an allowable cost under the Contract. Participation in outside training or attendance at meetings for a period of five (5) working days or more and all foreign travel incurred in connection therewith, will require the prior approval of the Commission.

D. Licenses, Professional Society Memberships, and Magazine Subscriptions

1. When professional licenses are considered essential to the performance of Contract work or where an employee is the official representative of the Contractor or attends meetings of engineering, management or professional societies as part of his work, reimbursement may be made for the actual costs of such licenses, dues or memberships, and magazine subscriptions.
2. Where employee subscriptions to technical magazines, professional licenses, or memberships in scientific, engineering or professional societies are considered of benefit to the performance of Contract work, reimbursements may be made up to one-half the costs of such subscriptions, licenses or memberships.

E. Publication Awards

Employees may receive token awards not to exceed \$50 for publications of technical papers in technical journals which are of interest to the Contract and for which no compensation has been received from the

Revised October 1, 1963

publisher.

F. Employee Social and Recreational Activities

Costs incurred as Contractor contributions to employee social and recreational activities may be made in an amount not exceeding the equivalent of 9 cents per week per employee.

G. Supper Money

Reasonable supper money allowances may be paid to exempt employees when they are not receiving overtime pay and work 2½ hours or more past the end of their standard shift. Non-exempt salaried and hourly employees, who receive overtime wages, will not receive supper money.

H. Employment Agency Fees

When employment agency services are required to secure properly qualified personnel for the performance of Contract work, agency fees for such services may be reimbursed in an amount not exceeding 10% of an employee's base annual wage or salary.

I. Printed Material

A pro rata share of the cost of printed material which is distributed to employees for training, information and indoctrination under the Contract is reimbursable.

J. Clothing Loss

Damage to or loss of employee clothing and personal property as the result of the performance of Contract work and not attributable to the employee's carelessness or negligence will be reimbursed. The amount of reimbursement will be based on replacement cost minus a fair depreciation estimate.

K. Personal Protective Equipment

The Contractor will be reimbursed for the cost of providing employees with required personal protective equipment or clothing in accordance with the Contractor's established policies and practices.

✓ L. Patent Awards

The Contractor may be cost reimbursed in amounts not to exceed \$100 per employee under the Contractor's Patent Award Program for patents granted and assigned to the Commission. Where the invention or dis-

Revised October 1, 1963

covery is of particular importance or value to the Commission, additional awards may be granted with prior written Commission approval.

M. Suggestion Awards

The Contractor may be reimbursed on a pro rata share basis for the reasonable cost of a Suggestion Awards Program. Hourly and non-exempt salaried employees on jobs which require working out improvements, developments, or new ideas shall be eligible for awards for only those suggestions which apply outside the scope of their own responsibility, duties, or assignments. Exempt employees shall not be eligible for suggestion awards. The minimum award is \$7.50. The maximum award is \$25,000. Reimbursement of any award in excess of \$250 for any one employee or \$500 for any employee group shall be subject to the approval of the Commission. The Contractor will provide the Commission with such data as may from time to time be required for appraisal and substantiation of costs incurred under the program.

O. Family Day

The Contractor may be reimbursed on a pro rata share basis for the reasonable cost of holding an annual "Family Day - Open House" program. Reimbursement shall be subject to prior approval of the Commission.

P. Cooperative Student Work Program

When it is in the interest of the contract to afford engineering or scientific students employment under a cooperative arrangement with an accredited college or university that has a bona fide and established cooperative student work program in accredited, engineering and/or scientific disciplines, reimbursement may be made for expenses as follows:

1. Travel and Related Expenses for the Student's Initial Interview

- a. The actual cost of transportation between the school and the contractor plant site by common carrier, or \$.08 per mile plus highway, bridge, ferry and tunnel tolls when travel by private passenger vehicle is used.
- b. The reasonable actual cost of lodging plus an allowance not in excess of \$7.50 per day for subsistence.
- c. The actual cost of necessary telephone calls, telegrams, and incidental transportation expenses.

Revised October 1, 1963

2. Travel and Relocation Expenses

- a. Travel as described in A.1., above between the school and the contractor's plant site for each 6 months term of work where the student ordinarily lives (except when in school) more than 50 miles from the contractor's plant site.
- b. The reasonable actual cost of lodging plus a subsistence allowance not in excess of \$7.50 per day while in travel status.
- c. In order to allow the student time to find housing, the reasonable actual cost of lodging not to exceed \$7.50 per day for a period up to one week (7 days) on the initial work term and up to 3 days on subsequent work terms and approved by the contractor on an individual basis.

3. Salaries

Students working under a cooperative program and performing work on the contract will be paid according to the following scale:

	<u>Work Term*</u>	<u>Weekly Salary</u>
Co-op Student 1	(1)	\$78.00
	(2)	82.00
Co-op Student 2	(3)	90.00
	(4)	94.00
Co-op Student 3	(5)	102.00
	(6)	106.00
Co-op Student 4	(7)	114.00
	(8)	114.00

* Each term represents 3 months

4. Continuity of Service

The student's return to school work at the end of each work term will, for the purpose of calculating company benefits, be regarded as a resignation and service will not accumulate from one term to another unless and until the student ceases to work under the cooperative program and becomes a full time regular employee. At such time as the student becomes a full time regular employee all company benefits will be applicable to the student and credit will

Revised October 1, 1963

be given for the full time he worked under the cooperative program.

5. Other Benefits

Cooperative students will not be eligible for all company benefits but may be treated the same as a regular employee under Appendix "A" for the following:

Section II	A	Holidays
Section III	D - 1	Court Duty
	D - 3	Death in Immediate Family
	D - 5	Required Selective Service Examinations
Section IV	B	Group Insurance

Revised October 1, 1963

SCHEDULE I

SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Manufacturing Manager	13 J	\$1150 - \$1905
Engineering Manager "B"	12 J	1035 - 1710
Engineering Specialist Plant Manager "C" Section Head	11 J	940 - 1555
Manufacturing Superintendent Supervisor of Product Engineering Advanced New Product Development Engineer-Sylcor	10 J	855 - 1410
Advanced Research (or Development) Engineer Engineer-in-Charge Supervisor of Quality Control "A" Senior Sales Engineer	9 J	765 - 1260
Equipment Design Specialist General Foreman Project Engineer Research (or Development) Engineer Supervisor of Cost Control "A"	8 J	690 - 1145
Safety Engineer, Sylcor Research Metallographer Senior Engineer "A" Supervisor, Production Control "B" Supervisor, Quality Control "B" Supervisor of Personnel "B"	7 J	635 - 1045

Revised December 30, 1963

Contract No. AT(30-1)-1293 with
 Sylvania Electric Products Inc.,
 Sylcor Division
 Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Contract Administrator Equipment Designer, Sr. Purchasing Agent "A" Senior Engineer "B" Supervisor of Security and Administrative Service Supervisor of Maintenance "B" Toolroom Foreman Foreman Class I Tool Coordinator	6 J	\$ 590 - \$ 965
Buyer Cost Analyst & Statistician Supervisor of An Accounting Department Section	5 K	550 - 890
Engineer Foreman, Nuclear Products Industrial Engineer Accountant, Senior Foreman II Personnel Assistant Systems and Procedures Analyst, Jr. Equipment Designer	4 K	510 - 815
Cost Accountant	3 K	470 - 745

Revised December 30, 1963

SCHEDULE I

SALARIED EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Weekly Salary Range</u>
Master Craftsman Technical Associate	64	\$126 - \$190
Designer-Draftsman	63	118 - 176
Material Requirements Analyst Production or Maintenance Supervisor I Technician, Senior Production Scheduling Clerk Job Estimating Clerk Accountability Supervisor	62	109 - 166
Draftsman Accountant, Junior Production or Maintenance Supervisor II Safety Inspector Plant Protection, Supervisor	60	97 - 148
Employment Interviewer & Counselor Buyer, Junior Nurse, Senior Technician Stock Clerk Production Control Clerk	59	91 - 138
Payroll Accountant Purchasing Clerk Secretary, Senior	58	86 - 130

Revised October 1, 1963

SCHEDULE I

SALARIED EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Weekly Salary Range</u>
Draftsman, Junior Nurse Production Section Leader	57	\$82 - \$123
Production Control Clerk, Junior Technician, Junior Secretary Accounting Clerk, Senior Stock Clerk, Junior Statistical Clerk, Senior	56	77 - 114
Clerk, Senior	55	74 - 106
Accounting Clerk, Junior Technical or Statistical Clerk Telephone Operator II	54	71 - 98
Clerk-Typist	52	71 - 86

General Wage Increase - Effective September 2, 1963

Revised October 1, 1963

SCHEDULE II

HOURLY EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Hourly Salary Range</u>
Tool, Die & Model Maker "A"	IG 12	\$3.05 - \$3.66
Machinist "A" Electrician Specialist Inspector "A" Sheet Metal Specialist	IG 11	2.88 - 3.49
Mechanic "A" Welder "A" Sheet Metal Worker "A" Electrician "A" Welder I Machinist I	IG 10	2.72 - 3.28
Machinist "B" Carpenter Inspector "B"	IG 9	2.56 - 3.08
Mechanic "B" Process & Equipment Checker Assembly & Furnace Brazing Rolling Mill Operator Melter Guard Sergeant Fluoroscope Operator & X-Ray Inspector Radiographist	IG 8	2.41 - 2.92

General Wage Increase - Effective September 2, 1963

Revised October 1, 1963

SCHEDULE II

HOURLY EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Hourly Salary Range</u>
Armed Guard Armed Courier Storekeeper Machinist "C" Inspector "C" Chemical Room Operator Machining Operator-CPP Sodium Loading Dry Box Operator Briquetting Operator Heat Treatment Operator Hot Pressing Operator-VB Welding Operator-VB Machining Operator-VB Fluoroscope Operator Hot Press Operator Finishing Operator Maintain Chemical Solutions	IG 7	\$2.25 - \$2.73
Materials Stock Clerk Mechanic "C" Canning-Hot Press Operator Canning-Assembler Die Processing Operator Machining Operator-AEC Plating Machine Operator Fabrication Operator Rack Maintenance Man	IG 6	2.14 - 2.56
Groundskeeper Trainee, Production	IG 5	2.02 - 2.41
Maintenance Apprentice	IG 4	1.91 - 2.26
Cafeteria-Dishwasher, Porter Janitor-Porter	IG 3	1.81 - 2.13

General Wage Increase - Effective September 2, 1963

Revised October 1, 1963

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1st Review Date: <u>4/3/63</u> Authority: <u>ADPC LADD</u> Name: <u>Black</u> 2nd Review Date: <u>7/2/63</u> Auditor: <u>APD</u> Name: <u>Donahue, J. Donahue</u>	Determination (Classification Number) 1. Classification Unchanged 2. Classification changed to: <input checked="" type="checkbox"/> Classification Changed 3. Other: <u>CG-NMP-3</u> 9-00
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DCF #2271-H

March 22, 1963

PRODUCTION COSTS OF 3 BUNCH
No. 2 of 4 copies Series A

Mr. R. C. Blair, Manager
 U.S. Atomic Energy Commission
 Savannah River Operations Office
 P.O. Box A
 Aiken, S.C.

Attention: Mr. N. J. Donahue

Gentlemen:

We are pleased to submit a proposal covering program changes to the scope of work, as requested in your letter of February 20, 1963 (SR-TM-9424) and revised by your telegram of 3/12/63. This supersedes our submission dated 2/27/63.

The new total costs for the contract period are \$3,691,700 including fee. The cost information covers actual costs from October, 1962 through February, 1963 and new estimated costs for the period March through September, 1963.

In addition to the revised production programs, this proposal covers continuation of the scope of the current development programs as detailed in our previous proposal DCF #2165-H, and additional new work as outlined below.

As authorized by your letter, we have adjusted the production schedules for the Mark V-B IF and Mark V-E IF programs to effectively utilize manpower and equipment and to minimize employee recruiting later in the contract period. By advancing

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 OR THE PROHIBITED PERSON IS PROHIBITED

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DCF #2271-H

R. C. Blair

-2-

3/22/63

the Mark V-B schedule, we make it possible to initiate Mark V-E production with minimum new employment while retaining trained and experienced personnel.

This proposed Mark V-B IF schedule exceeds the cumulative deliveries required by SR-TM-9424. The Mark V-E IF schedule adjustment is necessitated by the fact of our annual vacation shutdown during July. These schedules (units in tons) follow:

<u>PERIOD</u>	<u>MARK V-B IF ribless</u>	<u>integral rib</u>	<u>MARK V-E IF integral rib</u>
March '63	22	40	--
April	--	57	--
May	--	57	--
June	--	57	--
July	--	16	10
August	--	40	22
September	--	40	22

VP 6F
The cladding of Mark V-B OF elements will be discontinued upon depletion of inventory in March, 1963.

TH
Funds requested for Mark VII-T (Thorium) work cover the machining and cladding of approximately 9,500 slugs for delivery by September 30, 1963 and the stripping of aluminum cladding from approximately 2,500 pounds of reject Mark VII-T slugs.

12 1/2
The capital equipment list (Schedule #3) conforms to the format discussed with Mr. M. Robinson on 3/22/63. The list of items and estimated costs have been revised to reflect actual expenditures and projected expenditures through September, 1963. The new lists contain funds authorized for the design of a new inline press and funds needed to prepare for production of Mark V-E only at the level shown on our adjusted schedule above. As a basis for these Mark V-E equipment needs, we have used and updated the list for Phase I detailed in our letter dated 12/31/62.

We propose to undertake on a best efforts basis, a program to

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DCP #2271-H

R. C. Blair

-3-

3/22/63

convert to oxide approximately two hundred pounds of scrap uranium and uranium carbide. It is our understanding that this material is pyrophoric. This will require installation of an inert-atmosphere dry-box for handling the material prior to oxidation. Our estimated cost for this work totals \$1,300, including fee, and is included in the total development program funds.

We propose to conduct preliminary development work on the feasibility of hot pressure bonding zircalloy-2 cladding to uranium core specimens. The cost estimated in this proposal is limited to that needed to prepare, on a best efforts basis, samples of direct zirconium to uranium bonding and samples of zirconium to uranium bonding, with a nickel-aluminum interface. Our estimated cost for this work totals \$1,120, and is included in the total development program funds.

Where not specifically revised by this proposal, all other scope items remain as stated in Modification #32 of Contract AT(30-1)-1293.

The additional information requested in your letter is made part of this proposal, as is a detailed explanation of the overhead figures used in our December 20, 1962 proposal. This is Schedule #5. Other overhead detail and background data are being forwarded to your financial staff under separate cover.

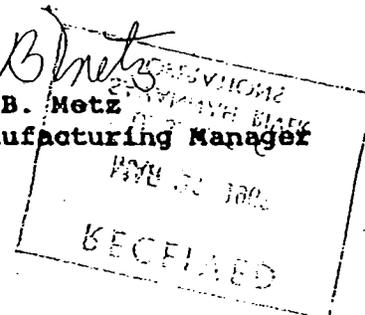
May we state that we are pleased to submit this proposal for your consideration. We hope you find it satisfactory. We are available to meet with your staff at their convenience should further discussion be desirable.

Yours very truly,

SYLCOOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.

DBM/gg
Att: Sched. 1 thru 5

D B Metz
D. B. Metz
Manufacturing Manager



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USDOE 017892

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Office Memorandum • UNITED STATES GOVERNMENT

TO : J. S. Hopkins, Director
Administrative Division
FROM : *James R. Jakes*
A. Y. Morgan, Director
for Budget and Finance Division

DATE: APR 12 1963

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SUBJECT: REVIEW OF SYLCOR PROPOSAL DCF-2271-H
FB:MER:mp

Document No. SR *FB-934*

This document consists of 5 pages,

No. 1 of 8 copies, Series R

We have reviewed Sylcor's revised proposal (DCF-2271-H) for the contract year ending September 30, 1963 and submit the following comments, financial analysis and contract modification data.

Comments

Since there were significant changes in the Mark V-B Program, Mark V-E elements were required for a pilot loading and since additional thorium was to be canned, Sylcor was asked to submit a revised proposal which would include the above changes in scope. The change in scope would be effective March 1, 1963.

A revised proposal was received (DCF-2260-H) dated February 27, 1963 incorporating the above changes. However, as a result of inappropriate increases in certain items of costs, the proposal DCF-2260-H was not accepted and Sylcor was requested to submit another proposal which they did - DCF-2271-H dated March 23, 1963.

The following is a comparison of costs and production between those currently approved and those included in proposal DCF-2271-H.

	12-20-62 Estimated DCF-2223-H	3-23-63 Estimated DCF-2271-H	Increase or (Decrease)
(In Thousands of Dollars)			
Mark VII-A	\$ 449	\$ 440	\$ (9)
Mark V-B	2,452	2,033	(419)
Mark V-E	-	307	307
Development	299	302	3
Thorium	64	142	78 <i>new</i>
Tooling	80	74	(6)
Fabricated Equipment	185	195	10
Purchased Equipment	167	199	32
Total	<u>\$3,696</u>	<u>\$3,692</u>	<u>\$ (4)</u>

DEPARTMENT OF ENERGY, SAVANNAH RIVER RESEARCH ESTABLISHMENT, NON REVIEW
 Determination (Circle Number)
 1. Classification Unchanged
 2. Classification changed to:
 3. Classification Cancelled
 4. Other: CG-NMP-2 2.00
 1st Review Date 4/3/63
 Authority: B.A.M. ADD
 Name: *J.R. Jakes*
 2nd Review Date 4/16/63
 Authority: ADD
 Name: *James R. Jakes*

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at 301-1293

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APR 12 1963

J. S. Hopkins

-2-

<u>Production & Unit Cost</u>	12-20-62	3-23-63	Increase
	Estimated DCF-2223-H	Estimated DCF-2271-H	or (Decrease)
	(In Thousands of Dollars)		
Mark VII-A - Prod. Lbs.	420,000	442,000	22,000
- Unit Cost	\$1.06	\$.99	\$(.07)
Mark V-B - Prod. Lbs.	1,243,200	957,200	(286,000)
- Unit Cost	\$1.97	\$2.12	\$.15
Mark V-E - Prod. Lbs.	-	108,000	108,000
- Unit Cost	-	\$2.84	\$2.84
Thorium - Slugs	7,064	16,564	9,500
- Unit Cost	\$9.06	\$8.57	\$(.49)

Estimated Costs - Expense

Direct Labor	\$1,073,100	\$1,062,336	\$(10,764)
Direct Materials	967,900	873,173	(94,727)
Overhead	1,089,500	1,162,729	73,229
G & A	198,500	196,480	(2,020)
Adjust.	(1,240)	972	2,212
Subtotal	3,327,760	3,295,690	(32,070)
Fee Adj. Thorium	-	(478)	-
Fee	199,665	197,741	(2,402)
Adjustment	1,240	-	(1,240)
Purchased Equipment	167,200	199,319	32,119
Total	<u>\$3,695,865</u>	<u>\$3,692,272</u>	<u>\$ (3,593)</u>

We are concerned with the increases in the estimated unit costs and the continued high total cost of Mark V-B. However, in a discussion with Bill Mandaro, we were assured that during the change-over period, this is the best forecast that they can make. Mandaro did inform us that he believes that with their planned automation, over the next six months, they would expect to get a much lower unit cost for Mark V-B in the next contract period. This, we expect in subsequent proposals.

We asked Mandaro why the unit costs for V-E were so high, and he informed us that they are essentially experimental quantities being produced in experimental facilities and represented their best estimate. We have no experience basis to evaluate the estimate for V-E.

We questioned the increase in cost and fee for canning the first batch of thorium slugs which were to be completed in March. The increase in cost was about \$8,000 with a fee of \$478. Sylcor

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USDOE 017861

J. S. Hopkins

has agreed that there was no change in scope here and will decrease their fee request by \$478 (telecon Robinson to Gannon 4/8/63). They will confirm by letter.

We also questioned their increase in overhead from the December 20, 1962 proposal (DCF-2223-H). We discussed the overhead increase with Bill Crowley and he indicated that the overhead was actually over-running their December 20 estimates by a considerable amount. Crowley indicated that proper significance had not been given in the December 20 estimates to the discontinuance of the work for OROO and GE in its effect on the allocation of overhead to SROO. Some \$100,000 per year of overhead was being absorbed by OROO and HOO work. The following is a comparison of actual with estimated overhead through February 1963.

	<u>Estimated</u>	<u>Actual</u>	<u>Overrun</u>
Overhead Costs	\$465,400	\$491,509	\$26,109

The actual February rate of overhead was \$106,183. Assuming that it would continue at the February rate through September, the overhead for the contract year would be:

7 Months x \$106,183	\$743,281
Actual thru February	<u>491,509</u>
Total Projected	\$1,234,790

Revised estimate for overhead for the contract year is \$1,162,729.

Conclusion

Sylcor is producing some 85 - 90 tons less of natural uranium during the revised period which is offset in part by an increase for thorium (9500 slugs) and they were going into the production of new elements (V-E). As evidenced by the cost comparisons, there is very little increase in cost. Therefore, since Sylcor is in a transitory period during which optimum costs conditions do not exist, we recommend acceptance of the proposal after the reduction of \$478 in fee.

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J. S. Hopkins

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APR 1 - 1963

The following changes should be made in the financial portion of the contract.

1. Obligations: Since the estimated cost change is small and there are changes in funding requirements for stores inventories and working capital, no changes should be made in obligations.
2. The cover sheet of the contract should be changed as follows:

	<u>SR00</u>	<u>NY00</u>	<u>Total</u>
Previous Direct Cost Mod. 32	\$22,702,786	\$3,951,805	\$26,654,591
This Modification Net Increase	<u>2,402</u>	<u>-</u>	<u>2,402</u>
New Total Direct Costs	<u>\$22,705,188</u>	<u>\$3,951,805</u>	<u>\$26,656,993</u>
Previous Fixed Fee	\$ 1,318,305	\$ 172,150	\$ 1,490,455
This Modif. Decrease	<u>(2,402)</u>	<u>-</u>	<u>(2,402)</u>
New Total Fixed Fee	<u>\$ 1,315,903</u>	<u>\$ 172,150</u>	<u>\$ 1,488,053</u>
Total Est. Cost and Fixed Fee	<u>\$24,021,091</u>	<u>\$4,123,955</u>	<u>\$28,145,046</u>
Total Obligated 3/1/63			<u>\$28,145,046</u>

3. Paragraph 1, Estimate of Cost and Fixed Fee, of Article IV - Estimates of Costs, Obligations of Funds, and Fixed Fee should be changed to read as follows:

(1) Estimate of Cost and Fixed Fee - The presently estimated cost of the work under the contract is \$26,656,993, exclusive of the contractor's fixed fee. The contractor's fixed fee as set forth in Paragraph 2, Article V of the contract is \$1,488,053. The estimated cost of the work as described in Paragraph 1 of the Article entitled Scope of Work for the period October 1, 1962 to September 30, 1963 is \$3,495,009 exclusive of the contractor's fixed fee of \$197,263.

(2) The amounts included in subparagraph (d) to Paragraph 2, Fixed Fee of Article V - Allowable Cost and Fixed Fee should be changed to read \$197,263.

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J. S. Hopkins

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APR 12 1963

(3) Subparagraph (d) of Paragraph 2, Payment of Fixed Fee
of Article VI - Payments should be changed to read:

(d) For the period October 1, 1962 through February 28,
1963, ninety per cent (90%) of the fixed fee of
\$83,195 shall become due and payable in monthly
installments of \$14,975. For the period March 1,
1963 through September 30, 1963, ninety per cent
of the fixed fee of \$114,068 shall become due and
payable in monthly installments of \$14,666.

CC: J. J. Wise, Asst. Mgr. for Admin.
N. J. Donahue, T&P Division
E. W. Stark, Accounting Br.
R. A. Messick, Contract Fin. Br.

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USDOE 017864

A

WSRC CLASSIFICATION REVIEW	
Review Date: <u>4/28/04</u>	Determination (Circle Number)
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: <u>Rh Collins</u>	2. Classification Changed To:
2nd Review Date: <u>4/28/04</u>	
Authority: <u>ADD</u>	<input checked="" type="checkbox"/> 3. Classification Cancelled
Name: <u>MMH</u>	4. Other: <u>CG-NMP-2 8/04</u>

The document consists of 11 pages
 of 1 copies series 7

SR-A-141

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED MAY 1, 1963, UNDER
 MODIFICATION NO. 34

The scope of work to be performed by the Contractor during the period October 1, 1962, through September 30, 1963, as set forth by Modification No. 33 is revised to read as follows:

1. MARK VII-A - MARK V-B AND MARK V-E (Inner-Fuel)

a. The Contractor shall manufacture and furnish to the Commission Mark VII-A, Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark VII-A (Tons)	Mark V-B (Tons)		Mark V-E (Tons) Integral Rib
		Integral Rib	Ribless	
October 1962	70	10.2	0	0
November 1962	70	10.2	0	0
December 1962	70	10.2	0	0
January 1963	0	27.0	27	0
February 1963	0	38.0	27	0
March 1963	0	40.0	22	0
April 1963	0	57.0	0	0
May 1963	0	74.0	0	0
June 1963	0	74.0	0	0
July 1963	0	41.0	0	10
August 1963	0	48.0	0	22
September 1963	0	48.0	0	22

b. The Contractor shall produce by November 29, 1962, 50 Mark V-B IF ribbed dummy slugs according to Du Pont Drawing SSK 4-3-222 using unplated stainless steel as the core material rather than uranium.

2. MARK V-B (Outer-Fuel)

Maintain Mark V-B outer-fuel element facilities in ready standby which shall include such minimum token operation as required to maintain capability. It is understood that minimum token operation will not exceed an average production of approximately 100 pieces per month. This program will be discontinued upon depletion of inventory in March 1963.

Group 1: Excluded from automatic down-grading and declassification.

Cy 9A+10A destroyed 7/27/64

3. PROGRAM DEVELOPMENT

a. Mark V-E

Initiate development of a process for canning Mark V-E inner-fuel elements by the hot pressure bonding process. Contractor will conduct a program using its best efforts toward preparation of approximately 1,750 flow test, qualification, and reactor test pieces by June 1, 1963.

The program shall include the preparation of specifications and operating procedures for canning Mark V-E inner-fuel elements, including all necessary research, development, canning and data accumulation. This program will also include the design of the necessary tooling and equipment for converting to a production program in either hot pressure bonding or hot die sizing process, whichever method is authorized by the Commission.

b. Hot Die Sizing

Continue investigation into the hot die sizing process of cladding Mark V-B inner-fuel elements to determine the feasibility and economic advantages, if any, of this method as a production process. Contractor shall design, procure and fabricate such equipment and tooling as is necessary to prepare test pieces, and conduct experimental procedures.

Also, the Contractor shall prepare specifications and operating procedures for canning Mark V-B and V-E inner-fuel elements in a production method, if possible. Further, the Contractor shall design such tooling and equipment as is necessary to automate or mechanize the process evolved and to adapt this process to the Mark V-E fuel element when authorized by the Commission.

c. Nondestructive Testing

Investigate nondestructive techniques for the inspection of all fuel element cores and slugs processed at the Hicksville Plant. The work under this program will consist of the following:

1. Continuation of work on the development of a method to detect the formation of a nickel-uranium eutectic in hot pressure bonded slugs.
2. Design of a positive nondestructive test for accurately distinguishing grain size and orientation of uranium after heat treatment and the incorporation of such test in the production line to permit inspection of 100 percent of the cores processed.

3. Improvement of a test to measure nickel thickness on cores and the plating quality and the modification of the equipment so that it is applicable to Mark V-E size cores and can be incorporated into an automatic assembly operation.
4. Modification of bond testing equipment to cover Mark V-E size cores and the incorporation of bond testing into planned automated inspection equipment.
5. Automation of recent developments in the field of nondestructive testing and the extension thereof to development and production programs on V-B, V-E, and hot die sizing.

d. Zirconium Cladding

1. Conduct preliminary development work on the feasibility of hot pressure bonding Zircaloy-2 cladding to uranium core specimens. Prepare, on a best efforts basis, samples of direct zirconium to uranium bonding, with a nickel-aluminum interface.
2. Undertake the canning of twelve fuel tubes in zirconium, ten of which are to be acceptable for reactor use. The canning process will consist of etching and nickel plating the cores, assembling the cores in the tubing with a layer of aluminum foil between the core and the zirconium parts, and hot pressing the assembly to attempt to obtain bonding between all the metals.

e. Recovery of Ribbed Elements

Perform development work on recovery of Mark V-B IF ribbed elements accomplishing delivery of 2,500 re-canned cores to the Savannah River Plant prior to August 31, 1963, and an additional 2,500 prior to September 30, 1963.

f. Oxidation of Scrap

Undertake, on a best efforts basis, a program to convert to oxide approximately two hundred pounds of scrap uranium and uranium carbide.

g. Cladding of Dingt Cores

Clad experimental dingt Mark V-E IF cores and deliver 120 in June and 240 in August 1963 to the Savannah River Plant.

[REDACTED]

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED MAY 1, 1963, UNDER
MODIFICATION NO. 34

4. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont tooling program.

5. THORIUM

Complete the thorium program initiated under Modification No. 31 to the Contract. Strip Al cladding from approximately 3,900 pounds of reject VII-T slugs (from the Savannah River Plant). Machine and clad approximately 9,500 additional thorium metal slugs for delivery to the Savannah River Plant by September 30, 1963; also machine thorium rod stock sufficient to produce an additional 2,000 Mark VII-T elements.

~~SECRET~~

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

5

Modification No. 33
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO Amend scope of work and other
provisions of the contract.

EFFECTIVE DATE March 1, 1963

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>SROO</u>	<u>NYOO</u>	<u>TOTAL</u>
Previous Direct Cost (Modification No. 32)	\$22,702,786	\$3,951,805	\$26,654,591
This Modification Net Increase	<u>2,402</u>	<u>-</u>	<u>2,402</u>
New Total Direct Costs	<u>\$22,705,188</u>	<u>\$3,951,805</u>	<u>\$26,656,993</u>
Previous Fixed Fee	\$1,318,305	\$ 172,150	\$ 1,490,455
This Modification Decrease	<u>(2,402)</u>	<u>-</u>	<u>(2,402)</u>
New Total Fixed Fee	<u>\$1,315,903</u>	<u>\$ 172,150</u>	<u>\$ 1,488,053</u>
Total Est. Cost and Fixed Fee	<u>\$24,021,091</u>	<u>\$4,123,955</u>	<u>\$28,145,046</u>
Total Obligated 3/1/63			<u>\$28,145,046</u>

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in the Atomic Energy Act of 1954 and its trans-
mittal or the disclosure of its contents in any
manner to an unauthorized person is prohibited.~~

USDOE 017275

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 33
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 17th day of May, 1963, effective March 1, 1963, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS; as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is revised as of March 1, 1963, and is attached hereto and made a part hereof.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$26,656,993, exclusive of the Contractor's fixed fee. The Contractor's fixed fee, as set forth in paragraph 2., Article V, of the Contract is \$1,488,053. The estimated cost of the work, as described in paragraph 1. of the Article entitled SCOPE OF WORK for the period October 1, 1962, to September 30, 1963, is \$3,498,602, exclusive of the Contractor's fixed fee of \$197,263."
3. In subparagraph (d) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, delete the figure "\$199,665" and substitute therefor the figure "\$197,263."
4. Subparagraph (d) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

CONFORMED COPY

USDOE 017276

"(d) For the period October 1, 1962, through February 28, 1963, ninety percent (90%) of the fixed fee of \$83,195 shall become due and payable in monthly installments of \$14,975. For the period March 1, 1963, through September 30, 1963, ninety percent (90%) of the fixed fee of \$114,068 shall become due and payable in monthly installments of \$14,666."

5. Appendix "K," General Provisions, to Contract AT(30-1)-1293 is amended to delete subparagraph (a) Eight-Hour Law of 1912 - Overtime Compensation and substitute therefor the following new provision:

"(a) Work-Hours Act of 1962 - Overtime Compensation

This Contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

1. No contractor or subcontractor contracting for any part of the contract work shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.
2. In the event of any violation of the provisions of paragraph 1., the Contractor and any subcontractor responsible for such violation shall be liable to any affected employee for his unpaid wages. In addition, such Contractor or subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph 1., in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of forty hours in a workweek without payment of the required overtime wages.
3. The Contracting Officer may withhold, or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor the full amount of wages required by this Contract and such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for liquidated damages as provided in paragraph 2.

Modification No. 33
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. The Contractor agrees to insert the foregoing clauses 1., 2., and 3., and this clause 4., in all subcontracts."

6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, Savannah River Operations
Office

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ D. B. Metz

TITLE: Manufacturing Manager, Sylcor Div.

WITNESSES:

/s/ Jean Case

Hicksville, New York
(Address)

/s/ Milton Boll

Hicksville, New York
(Address)

I, J. M. Toohar, certify that I am Asst. Secretary

of Sylvania Electric Products Inc., named above; that

D. B. Metz who signed this Agreement on behalf of said corporation, was then Mfg. Mgr. - Sylcor Division of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 8th day of May, 1963.

/s/ J. M. Toohar

CORPORATE SEAL

Those Listed Below

May 20, 1963

J. A. McFesly, Chief of Contracts
Contracts and Procurement Branch
Administrative Division
MODIFICATION NO. 33 TO CONTRACT AT(30-1)-1293 WITH
SYLVANIA ELECTRIC PRODUCTS INC.

AC:PS

Attached for your use are signed and/or conformed copies,
as indicated, of the subject modification. Appendix "F"
of the modification sets forth the scope of work to be
followed and is classified.

Attachments:
As stated

MEF Division (1 signed, 3 conformed)
TEP Division (2 conformed - including Appendix "F" (1 cy.)
Office of Chief Counsel (1 conformed - including Appendix "F")
Patent Branch, OCU (1 conformed - including Appendix "F")

Document transmitted herewith contains

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When requested, I will enclose and handle
any other information

USDOE 017274

A

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office
FINDINGS AND DETERMINATION

AUTHORIZATION FOR MODIFICATION OF COST-PLUS-FIXED-FEE CONTRACT

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
Contract No. AT(30-1)-1293
Modification No. 33

The Atomic Energy Commission proposes to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc. to amend the scope of work to be performed by the Contractor during the period October 1, 1962, through September 30, 1963.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering an immediate unit-price arrangement.
2. Program requirements are subject to immediate change.
3. Continuous process development is required.
4. The revised estimated cost of the work under the contract, \$3,498,602, is considered reasonable.
5. The fixed fee adjustment is based on the previously applied rate of 6 percent of the estimated cost fee base and is considered to be fair and equitable.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee Supplemental Agreement, and I hereby authorize the use of said Supplemental Agreement.

By: _____

R. C. Blair, Manager

Title: ~~Savannah River Operations Office~~

Date: MAY 2 1963

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 33
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 19th day of May, 1963, effective March 1, 1963, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS; as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended:

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is revised as of March 1, 1963, and is attached hereto and made a part hereof.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$26,656,993, exclusive of the Contractor's fixed fee. The Contractor's fixed fee, as set forth in paragraph 2., Article V, of the Contract is \$1,488,053. The estimated cost of the work, as described in paragraph 1. of the Article entitled SCOPE OF WORK for the period October 1, 1962, to September 30, 1963, is \$3,498,602, exclusive of the Contractor's fixed fee of \$197,263."
3. In subparagraph (d) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, delete the figure "\$199,665" and substitute therefor the figure "\$197,263."
4. Subparagraph (d) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(d) For the period October 1, 1962, through February 28, 1963, ninety percent (90%) of the fixed fee of \$83,195 shall become due and payable in monthly installments of \$14,975. For the period March 1, 1963, through September 30, 1963, ninety percent (90%) of the fixed fee of \$114,068 shall become due and payable in monthly installments of \$14,666."

5. Appendix "E," General Provisions, to Contract AT(30-1)-1293 is amended to delete subparagraph (a) Eight-Hour Law of 1912 - Overtime Compensation and substitute therefor the following new provision:

"(a) Work-Hours Act of 1962 - Overtime Compensation

This Contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

1. No contractor or subcontractor contracting for any part of the contract work shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.
2. In the event of any violation of the provisions of paragraph 1., the Contractor and any subcontractor responsible for such violation shall be liable to any affected employee for his unpaid wages. In addition, such Contractor or subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph 1., in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of forty hours in a workweek without payment of the required overtime wages.
3. The Contracting Officer may withhold, or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor the full amount of wages required by this Contract and such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for liquidated damages as provided in paragraph 2.

Modification No. 33
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. The Contractor agrees to insert the foregoing clauses 1., 2., and 3., and this clause 4., in all subcontracts."
6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF the parties hereto have executed this Modification as of the day and year first above written.

SYLVANIA ELECTRIC PRODUCTS INC.
~~UNITED STATES OF AMERICA~~
~~BY: U. S. ATOMIC ENERGY COMMISSION~~

BY: D. B. Metz
D. B. Metz

TITLE: Manufacturing Manager
Sylcor Division

UNITED STATES OF AMERICA
~~SYLVANIA ELECTRIC PRODUCTS INC.~~
BY: U. S. ATOMIC ENERGY COMMISSION

BY: R. C. Blair
R. C. Blair, Manager
TITLE: Savannah River Operations Office

WITNESSES:

Jean Case
Ellicottville, New York
(Address)

Mich. Jell
Ellicottville, N.Y.
(Address)

I, J. M. TOOLE, certify that I am ASS. SECRETARY
of Sylvania Electric Products Inc., named above; that

D. B. METZ who signed this Agreement on behalf of said corporation, was then MFG MGR - Sylcor Div. of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 8 day of MAY, 1963.

J. M. Toole

CORPORATE SEAL

Ram
Dn
RSH
JEC
Jm
JH
JW
JL

~~SECRET~~

1st Review Date: 4/9/63	Determination (Circle number)
Authority: EAD <input type="checkbox"/> ADD <input type="checkbox"/>	1. Classification Unchanged
Name: G. Slack	2. Classification changed to:
2nd Review Date: 4/2/63	3. Classification Unchanged
Authority:	4. Other: CG-ND 9-02
Name: [Signature]	

UNCLASSIFIED

May 29, 1963

DCF# 2322-H

Mr. R. C. Blair, Manager
 U. S. Atomic Energy Commission
 Savannah River Operations Office
 P. O. Box A
 Aiken, South Carolina

This document consists of 3 pages.
 No. of 3 copies. Series A

Attention: Mr. N. J. Donahue

Gentlemen:

As you analyze our latest proposal (P63-4) covering the recent changes in scope at Sylcor, we felt you might find the following data helpful.

We pointed out in our proposal letter that productivity has increased greatly at Sylcor. This is reflected in the cost per pound we are estimating for the Mark V-B IP production. We would like to submit this comparison of our current estimate with that of our previous proposal.

The attached chart and graph illustrate the point that the cost per pound of canning Mark V-B IP at this time is lower than our previous estimate, and we are forecasting further reductions in this contract period.

Very truly yours,

WRM/bm
 Attachments

W. R. Mandaro
 Plant Manager

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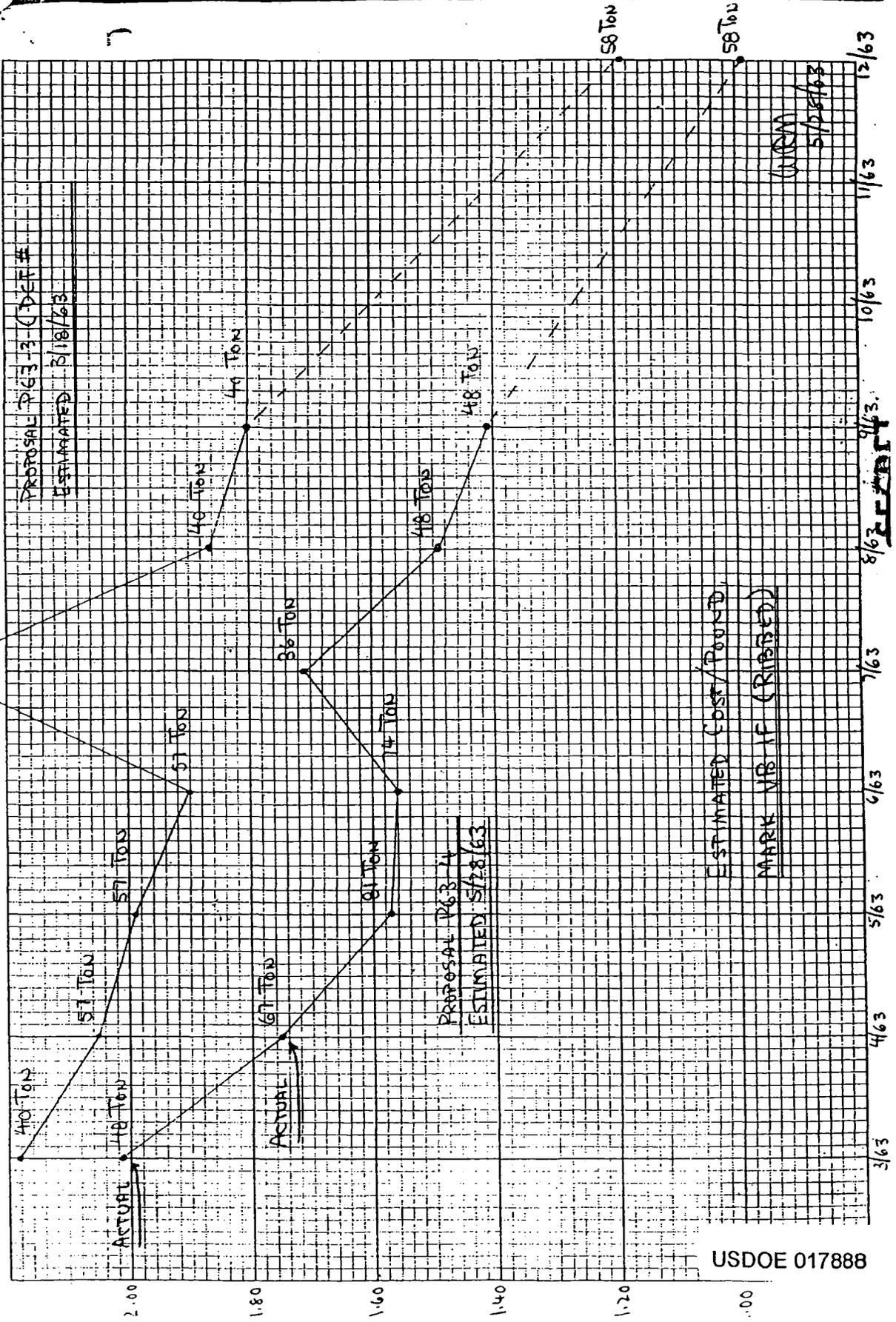
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USDOE 017886

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16 TON



PROPOSAL P63-3 (DEF #)

ESTIMATED 3/18/63

PROPOSAL P63-4
ESTIMATED 5/28/63

ESTIMATED COST/POUND
MARK UP IF (RIBBED)

UNION
5/28/63

USDOE 017888

Office Memorandum • UNITED STATES GOVERNMENT

TO : J. B. Hopkins, Director
Administrative Division
FROM : A. T. Morgan, Director
Budget & Finance Division

UNCLASSIFIED

DATE: JUN 14 1963

SUBJECT: REVIEW OF SYLCOR'S PROPOSAL P-63-4 DATED MAY 28, 1963

Document No. SR-1163

FB:MER:ac

This document consists of 5 pages,

We have reviewed Sylcor's proposal (P-63-4) which covers a revised scope of work for the five months period ending September 30, 1963, and submit the following comments, cost analysis, recommendation and contract finance data.

Comments and Cost Analysis

1. The change in scope for the five months period is as follows:
 - (a) Increase in Mark V-B canning from 420,000 to 570,000 pounds.
 - (b) Machine 2,000 thorium slugs.
 - (c) Perform development work on recovery of 5,000 inner-ribbed Mark V-B fuel elements.
 - (d) Strip the cladding from 1,400 thorium slugs.
 - (e) Perform additional development work on zircaloy cladding by the hot pressure bonding method.
 - (f) Clad 360 Mark V-E dingot elements for experimental purposes.

With the exception of the Mark V-B increase, the other increases in scope are small.

To accomplish the increase in scope for the five months period requires an increase in cost as follows:

DEPARTMENT OF ENERGY SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date: 4/3/63	Determination (Circle Number)
Authority: EADPC/ADD	1. Classification Unchanged
Name: G.B. Slack	2. Classification changed to:
2nd Review Date: 4/3/63	3. Classification Canceled
Authority: ADD	4. Other: EG-NRP-2 9-00
Name: Vernon J. Darden	

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USDOE 017854

	March 20, 1963 Estimate P-63-3	May 28, 1963 Estimate P-63-4	Change + or -
Direct Labor	\$ 431,220	\$ 419,880	\$(11,340)
Direct Materials	362,280	390,760	28,480
Overhead	465,170	457,220	(7,950)
G & A	82,100	82,260	160
Total	<u>\$1,340,770</u>	<u>\$1,350,120</u>	\$ 9,350
Fee	80,446	81,008	562
Purchased Equipment	109,800	119,900	10,100
Total	<u>\$1,531,016</u>	<u>\$1,551,028</u>	<u>\$ 20,012</u>

The revised estimate reflects a considerable improvement in unit cost for Mark V-B for the contract year as compared to their estimate of March 20, 1963. Sylcor informed us that this is possible because of much faster results than had been anticipated from automation, improvement in material prices, etc. The increased cost for purchased equipment represents a reallocation of costs from prior months of approved projects.

A comparison of the total estimates for the year ending 9/30/63 is as follows. The estimates in P-63-4 reflect actual cost through April 1963.

Mark VII-A	\$ 439,704	\$ 439,704	\$ -
Mark V-B	2,032,994	2,089,494	56,500
Mark V-E	307,230	289,316	(17,914)
Thorium Canning	141,588	122,518	(19,070)
Development	302,012	313,522	11,510
Fabricated Equipment	195,152	177,870	(17,282)
Tooling	74,273	51,720	(22,553)
Purchased Equipment	199,319	199,300	(19)
Total Costs (inc. fee)	<u>\$3,692,272</u>	<u>\$3,683,444</u>	<u>\$(8,828)</u>
<u>Fee Base</u>			
Direct Labor	\$1,068,180	\$1,056,840	\$(11,340)
Direct Materials	893,530	922,010	28,480
Overhead	1,136,620	1,128,670	(7,950)
G & A	197,360	197,520	160
Adjustment (Thorium)	(7,960)	(7,960)	-
Total	<u>\$3,287,730</u>	<u>\$3,297,080</u>	<u>\$ 9,350</u>
Fee @ 6%	<u>\$ 197,263</u>	<u>\$ 197,825</u>	<u>\$ 562</u>

3,683,444
197,825
3,485,619

JUN 14 1963

Unit Costs

	<u>12 Months</u>		<u>May to September</u>	
	<u>P-63-3</u>	<u>P-63-4</u>	<u>P-63-3</u>	<u>P-63-4</u>
<u>V-B</u>				
Estimated Cost	\$2,032,994	\$2,089,494	\$825,248	\$885,800
Production Lbs.	957,200	1,148,323	420,000	570,000
Unit Cost	\$2.12	\$1.82	\$1.96	\$1.55
<u>V-E</u>				
Estimated Cost	\$ 307,230	\$ 289,316		
Production Lbs.	108,000	108,000	Same	
Unit Cost	\$2.84	\$2.67		

As pointed out previously, Sylcor has informed us that this significant improvement in unit cost for both the V-B and V-E elements is due to improvement in material prices, earlier achievement of automation than previously anticipated, and other technological improvements.

Through the month of April, Sylcor has met or exceeded the production as established in their proposals which have been revised three times since October 1, 1962. With the exception of the months of March and April, their actual cost subject to fee has been very close to their estimates as follows:

	<u>Fee Base</u>		
	<u>Oct.-Nov.</u>	<u>Dec.-Feb.</u>	<u>Mar.-Apr.</u>
<u>Estimates</u>			
Direct Labor	\$174,890	\$279,940	\$182,130
Direct Material	138,250	238,290	154,710
Overhead	184,760	280,640	206,050
G & A	30,110	50,420	34,730
Total	<u>\$528,010</u>	<u>\$849,290</u>	<u>\$577,620</u>
<u>Actual</u>			
Direct Labor	\$176,054	\$272,932	\$180,560
Direct Materials	148,068	208,115	150,648
Overhead	175,279	316,230	191,054
G & A	29,807	49,843	37,609
Total	<u>\$529,208</u>	<u>\$847,120</u>	<u>\$559,871</u>

The underrun in March and April resulted primarily from an adjustment in Workmen's Compensation Insurance, which was not anticipated at the time of the preparation of the March 20, 1963 proposal.

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Recommendation

The Sylcor proposal should be accepted as submitted because a significant increase in Mark V-B scope is proposed with small increases in other activities and all this will be accomplished with a very small change in dollars.

Change in Obligations

Obligations under the contract should be decreased by \$8,828 computed as follows:

Net Cost Underrun	\$ (9,390)
Increase in Fee-	562
Net Decrease in Oblig.	\$ (8,828)

Contract Cover Sheet

The contract cover sheet should be changed to read as follows:

	<u>SROO</u>	<u>NYOO</u>	<u>Total</u>
Previous Direct Cost (Mod. 33)	\$22,705,188	\$3,951,805	\$26,656,993
This Modification Decrease	(9,390)	-0-	(9,390)
New Total Direct Costs	<u>\$22,695,798</u>	<u>\$3,951,805</u>	<u>\$26,647,603</u>
Previous Fixed Fee	\$ 1,315,903	\$ 172,150	\$ 1,488,053
This Mod. Increase	562	-0-	562
New Total Fixed Fee	<u>\$ 1,316,465</u>	<u>\$ 172,150</u>	<u>\$ 1,488,615</u>
Total Estimated Cost and Fixed Fee	<u>\$24,012,263</u>	<u>\$4,123,955</u>	<u>\$28,136,218</u>
Total Obligated 6/30/63			<u>\$28,136,218</u>

Contract Articles

1. Paragraph 1, Estimate of Cost and Fixed Fee, of Article IV - Estimates of Costs, Obligation of Funds, and Fixed Fee should be changed to read as follows:

- (1) Estimate of Cost and Fixed Fee - The presently estimated cost of the work under the contract is \$26,647,603, exclusive of the contractor's fixed fee. The contractor's fixed fee as set forth in Paragraph 2, Article V of the contract is \$1,488,615. The estimated cost of the work as described in Paragraph 1 of the Article entitled Scope of Work for the period October 1, 1962 to September 30, 1963 is \$3,485,619, exclusive of the contractor's fixed fee of \$197,825.

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29145046

J. S. Hopkins

-5-

JUN 14 1963

2. In subparagraph (d) of Paragraph 2, Fixed Fee, of Article V - Allowable Cost and Fixed Fee, change fee to read \$197,825.
3. Subparagraph (d) of Paragraph 2, Payment of Fixed Fee, of Article VI- Payments should be changed to read as follows:

(d) Ninety percent (90%) of the fixed fee of \$197,825 shall be due and payable in monthly installments as follows:

For period October 1, 1962 to February 28, 1963	\$14,975
For period March 1, 1963 to April 30, 1963	14,666
For period May 1, 1963 to September 30, 1963	14,767

cc: J. J. Wise, Asst. Manager for Admin.
N. J. Donahue, T&P Division
E. W. Stark, Accounting Branch
R. A. Messick, Contract Fin. Branch

~~SECRET~~

USDOE 017858

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions
of the contract.

EFFECTIVE DATE : May 1, 1963

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>SROO</u>	<u>NYOO</u>	<u>TOTAL</u>
Previous Direct Cost (Modification No. 33)	\$22,705,188	\$3,951,805	\$26,656,993
This Modification Net Decrease	<u>(9,390)</u>	<u>-0-</u>	<u>(9,390)</u>
New Total Direct Costs	<u>\$22,695,798</u>	<u>\$3,951,805</u>	<u>\$26,647,603</u>
Previous Fixed Fee	\$ 1,315,903	\$ 172,150	\$ 1,488,053
This Modification Increase	562	-0-	562
New Total Fixed Fee	<u>\$ 1,316,465</u>	<u>\$ 172,150</u>	<u>\$ 1,488,615</u>
Total Estimated Cost and Fixed Fee	<u>\$24,012,263</u>	<u>\$4,123,955</u>	<u>\$28,136,218</u>
Total Obligation 6/30/63			<u>\$28,136,218</u>

When separated from documents hereof
this document is UNCLASSIFIED

document transmitted herewith contains

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USDOE 017268

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 23rd day of August, 1963, effective May 1, 1963, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is revised as of May 1, 1963, and is attached hereto and made a part hereof.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$26,647,603, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., Article V of the Contract, is \$1,488,615. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work, for the period October 1, 1962, to September 30, 1963, is \$3,485,619, exclusive of the Contractor's fixed fee of \$197,825."
3. In subparagraph (d) of paragraph 2., Fixed Fee of Article V - ALLOWABLE COST AND FIXED FEE, delete the figure "\$197,263" and substitute therefor the figure "\$197,825."

USDOE 017269

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (d) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(d) Ninety percent (90%) of the fixed fee of \$197,825 shall be due and payable in monthly installments as follows:

For the period October 1, 1962, to February 28, 1963	\$14,975
For the period March 1, 1963, to April 30, 1963	14,666
For the period May 1, 1963, to September 30, 1963	14,767"

5. Appendix "E," General Provisions to Contract AT(30-1)-1293 is amended to delete Provision 11.(d), Nondiscrimination in Employment, and substitute therefor the following revised provision, effective upon execution of this modification.

"(d) Nondiscrimination in Employment

During the performance of this Contract, the Contractor agrees as follows:

- (1) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited, to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.
- (2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.
- (3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

- (4) The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.
 - (5) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
 - (6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.
 - (7) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States."
6. All other terms and conditions of the Contract remain unchanged.

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of
the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION
BY: /s/ R. C. Blair
TITLE: Manager, Savannah River Operations
Office

WITNESSES:
/s/ M. Boll
Hicksville, New York
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: /s/ D. B. Metz
TITLE: Manufacturing Manager
Sylcor Division

/s/ J. Case
Hicksville, New York
(Address)

I, J. M. Toohar, certify that I am Asst. Secretary
of Sylvania Electric Products Inc., named above; that D. B. Metz
who signed this Agreement on behalf of said corporation, was then Mfg. Mgr.
Sylcor Division of said corporation, and that this Agreement was duly
signed for and in behalf of said corporation by authority of its governing body
and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 6th day of August,
1963.

(CORPORATE SEAL) /s/ J. M. Toohar

A

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office
FINDINGS AND DETERMINATION

AUTHORIZATION FOR MODIFICATION OF COST-PLUS-FIXED-FEE CONTRACT

SYLOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
Contract AT(30-1)-1293
Modification No. 34

The Atomic Energy Commission proposes to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc. to amend the scope of work to be performed by the Contractor during the period October 1, 1962, through September 30, 1963.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering an immediate unit-price arrangement.
2. Program requirements are subject to immediate change.
3. Continuous process development is required.
4. The revised estimated cost of the work under the contract, \$3,485,619, is considered reasonable.
5. The fixed fee adjustment is based on the previously applied rate of six percent of the estimated cost fee base and is considered to be fair and equitable.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee Supplemental Agreement, and I hereby authorize the use of said Supplemental Agreement.

BY: _____

R. C. Blair, Manager
Savannah River Operations Office

TITLE: _____

DATE: _____

AUG 23 1963

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 23rd day of August, 1963, effective May 1, 1963, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission involving the use and occupancy of the land and buildings of the Contractor on Cantiague Road in Hicksville, Long Island, New York; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is revised as of May 1, 1963, and is attached hereto and made a part hereof.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS, AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$26,647,603, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., Article V of the Contract, is \$1,488,615. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work, for the period October 1, 1962, to September 30, 1963, is \$3,485,619, exclusive of the Contractor's fixed fee of \$197,825."
3. In subparagraph (d) of paragraph 2., Fixed Fee of Article V - ALLOWABLE COST AND FIXED FEE, delete the figure "\$197,263" and substitute therefor the figure "\$197,825."

A. E. C. FILE COPY

4. Subparagraph (d) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(d) Ninety percent (90%) of the fixed fee of \$197,825 shall be due and payable in monthly installments as follows:

For the period October 1, 1962, to February 28, 1963	\$14,975
For the period March 1, 1963, to April 30, 1963	14,666
For the period May 1, 1963, to September 30, 1963	14,767"

5. Appendix "E," General Provisions to Contract AT(30-1)-1293 is amended to delete Provision 11.(d), Nondiscrimination in Employment, and substitute therefor the following revised provision, effective upon execution of this modification.

"(d) Nondiscrimination in Employment

During the performance of this Contract, the Contractor agrees as follows:

- (1) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited, to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.
- (2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.
- (3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

- (4) The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.
- (5) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.
- (7) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States."

6. All other terms and conditions of the Contract remain unchanged.

Modification No. 34
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: [Signature]

R. C. Blair, Manager

TITLE: Savannah River Operations Office

WITNESSES:

M. J. Case
Blacksville, N.Y.
(Address)

J. Case
Blacksville, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.

BY: [Signature]

D. B. Metz

TITLE: Manufacturing Manager
Sylcor Division

I, J. M. TOOHER, certify that I am ASS. SECRETARY
of Sylvania Electric Products Inc., named above; that D. B. METZ
who signed this Agreement on behalf of said corporation, was then MEMBER
Sylcor Div. of said corporation, and that this Agreement was duly
signed for and in behalf of said corporation by authority of its governing body
and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 6th day of Aug.,
1963.

(CORPORATE SEAL)

[Signature]

COPY

COPY

COPY

USAEC
R. C. BLAIR
AUGUSTA, GA.

SEPTEMBER 27, 1963

D. B. METZ, SYLVANIA ELECTRIC PRODUCTS INC.
CANTIAGUE ROAD, HICKSVILLE, LONG ISLAND, NEW YORK

File

PENDING COMPLETION OF OUR REVIEW OF YOUR PROPOSAL AND NEGOTIATIONS OF AN APPROPRIATE MODIFICATION TO CONTRACT AT(30-1)-1293, AS AMENDED, YOU ARE AUTHORIZED TO PROCEED WITH THE WORK PROGRAMS OUTLINED IN YOUR SEPTEMBER 11, 1963, PROPOSAL AS AMENDED BY YOUR LETTER OF SEPTEMBER 20, 1963. IT IS UNDERSTOOD THAT THE PERFORMANCE OF THE WORK WILL BE IN ACCORDANCE WITH THE APPLICABLE TERMS AND CONDITIONS OF CONTRACT AT(30-1)-1293, AS AMENDED. FAILURE TO AGREE ON AN APPROPRIATE FIXED FEE FOR THE WORK WILL BECOME A DISPUTE AND WILL BE RESOLVED UNDER THE DISPUTES CLAUSE OF THIS CONTRACT. PENDING EXECUTION OF AN APPROPRIATE CONTRACT MODIFICATION, INTERIM FUNDS IN THE AMOUNT OF \$840,000, INCLUDING \$30,000 FOR CAPITAL EQUIPMENT, ARE OBLIGATED FOR CONTINUED PERFORMANCE OF THE WORK. THIS INCREASE BRINGS THE TOTAL AMOUNT OBLIGATED UNDER THE CONTRACT TO \$28,976,218.

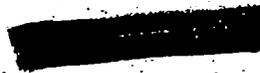
PLEASE ACKNOWLEDGE YOUR ACCEPTANCE BY RETURN TELETYPE. AC:RAMcF

bcc: Manager's Office
T&P Division
B&F Division
Office of Chief Counsel
Patent Branch, OCC

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A



The Commission of Atomic Energy
[Redacted]

36

WSRC DECLASSIFICATION REVIEW	
1st Review Date: <u>4/28/84</u>	Determination (Circle Number)
Authority: <input type="checkbox"/> ADCX <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: <u>H. Collins</u>	2. Classification Changed To:
2nd Review Date: <u>4/28/84</u>	
Authority: <u>ADD</u>	3. Classification Cancelled
Name: <u>provided for in paragraph 1. of Article I of Modification No. 29 of Contract No. AT(30-1)-1293, this Appendix "B" describes the scope of work to be performed by the Contractor during the period October 1, 1963, through September 30, 1964.</u>	

SR-A-142

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED OCTOBER 1, 1963, UNDER
MODIFICATION NO. 35

- 1. PRODUCTION
- A. MARK V-B AND MARK V-E (Inner-Fuel)

The Contractor shall manufacture and furnish to the Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark V-B (Tons) <u>Integral Rib</u>	Mark V-E (Tons) <u>Integral Rib</u>
October 1963	57	27
November 1963	41	27
December 1963	44	23
January 1964	48	23
February 1964	44	23
March 1964	46	23
April 1964	47	0
May 1964	44	0
June 1964	48	0
July 1964	12	0
August 1964	42	0
September 1964	42	0

- B. THORIUM

Complete the canning and delivery of 11,500 Mark VII-T slugs for irradiation at the Savannah River Plant.

II. PROGRAM DEVELOPMENT

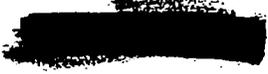
- A. ELEMENT DEVELOPMENT

- 1. Long Slugs

Develop a process for canning Mark V-B and Mark V-E IF and OF Elements up to 16" in length by the hot pressure bonding process. Both impact extrusions and tubing will be investigated for cladding. SROO Response to FOIA (SR) - 04-028



GROUP 1
EXCLUDED FROM AUTO-
MATIC DOWNGRADING
AND DECLASSIFICATION.



Cyfe 5A & 10A Electric
7/27/84

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

2. Added Rib

Continue development of the canning of Mark V-B IF elements with added ribs. Investigate the use of other types of aluminum for the rib and changes in the physical structure of the rib.

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

3. Tube Cladding

Study the effects of the use of tubing as cladding for Mark V-B and V-E IF hot pressure bonded slugs.

4. Recovery of Mark V-E

Develop a recovery program to reclaim reject Mark V-E IF slugs and reuse the cores. Set up standards, specifications and operating procedures, whereby reject slugs may be deacid and reprocessed through the HPB process.

B. TOOLING AND CLADDING MATERIALS

1. Furnace Tooling

Investigate potential improvements in quality and economy attainable through the replacement of Inconel X by such metals as AF71 or Inconel for furnace tooling, such as mandrels, dies and vacuum pots. Make items of promising materials and test them in the HPB process.

2. Cladding

Investigate potential advantages of low alloys of aluminum as cladding material. Test the most promising materials, such as aluminum with additives of beryllium or germanium, in the HPB process, for further evaluation at SRP.

C. INDUCTION HEATING

1. Heat Pattern Control

Run a series of experiments on HPB induction furnaces to determine actual heat patterns and provide a consistent improved control of the heat applied to the slug.

Investigate the possible use of scanning equipment which will designate the temperature of the die as it leaves the furnace, thereby offering additional improvement of heat pattern control.

2. Cores with Anodic Etch

Investigate possible improvement of HPB strengths by the use of anodic etching of cores before plating and the rapid heat-up cycle attainable with induction furnaces.

D. NONDESTRUCTIVE TESTING

1. Eutectic Prevention

Investigate new methods for the detection of Mark V-B and V-E slugs that have been overheated during the pressing cycle, such as the use of magnetic and hysteresis effects and the chemical test which showed promise with Mark VII-A slugs.

2. Nickel Plate Control

Continue investigation of new types of nickel detection and measurement, such as the magnetic probe, to provide a closer control of the nickel plate on cores.

3. Uranium Metal Quality

Refine and test ultrasonic equipment for potential use in the detection of metal quality rejects before plating.

4. Aluminum Metal Quality

Investigate methods of improving the detection of metal quality rejects in aluminum cladding components before they are used.

[REDACTED]

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED OCTOBER 1, 1963, UNDER
MODIFICATION NO. 35

III. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

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SYLVANIA ELECTRIC PRODUCTS INC.
SYLCOR DIVISION

Contract No. AT(30-1)-1293

APPENDIX "A"
Revised October 1, 1963

PERSONNEL PRACTICES

I. GENERAL PROVISIONS

This Appendix "A" sets forth the current personnel policies, wage and salary practices, employee benefit programs, travel, transportation, subsistence and moving expenses, and miscellaneous expenses and allowances approved as allowable costs under Contract No. AT(30-1)-1293.

The provisions included hereunder reflect regularly established policies and practices of the Contractor, modified only to meet the particular requirements of the Contract and approved by the Commission, and shall be administered in accordance with the Contractor's regular procedures. Reimbursement for items of cost pertaining to the personnel practices and procedures not specifically covered below shall be in accordance with this Contractor's published policies and procedures or consistent with the Contractor's established commercial practices and approved by the Contracting Officer.

This Appendix "A" may be modified from time to time, in whole or in part, without formal Contract modification by mutual written agreement between the Commission and the Contractor.

II. ABSENCES

A. Holidays

The Contractor recognizes nine (9) paid holidays in each calendar year.

Holidays falling on Sunday will be observed the following Monday.
Holidays falling on Saturday will be observed the preceding Friday.

B. Vacations

Employees of the Contractor who have, or will have, on July 1 of the current year the following records of continuous service, may receive paid vacations in accordance with the following schedule:

Contract No. AT(30-1)-1293 with
 Sylvania Electric Products Inc.,
 Sylcor Division
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<u>Length of Service</u>	<u>Hourly Employee</u>	<u>Salary Employee</u>
6 months but less than 1 year	20 hours	1 week
1 year but less than 3 years	40 hours	2 weeks
3 years but less than 10 years	80 hours	2 weeks
10 years but less than 25 years	120 hours	3 weeks
25 years or more	160 hours	4 weeks

A week's pay in lieu of one week's vacation may be granted to employees who are eligible for three or four weeks' vacation.

Additional prorated vacation payments may be made to employees eligible for vacation pay based on the following lengths of service:

Hourly Employees

More than 26 weeks but less than 52 weeks	1/26 of 20 hours for each week above 26
More than 2 years 12 weeks but less than 3 years	1 hour for each week above 2 years 12 weeks

Salaried Employees

More than 26 weeks but less than 52 weeks	1/26 of 1 week's pay for each week above 26
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The above vacation allowances are non-cumulative and shall be taken prior to December 25 of the current vacation year or forfeited.

31 RYM 2/14/64 JMS 2/29/64

Shift premium if applicable, may be included in vacation payments. If the majority of the employees have actually worked on a schedule averaging 48 hours or more per week for the first six months of a calendar year, vacation payments may be based on a 48-hour per week straight time basis.

An extra day's vacation is allowed for each paid holiday falling within the vacation period. Payment for such holiday may be granted to hourly or non-exempt salaried employees.

Employees who leave the Company prior to July 1 of the current year may receive a vacation accrual equal to the number of weeks on the payroll since last July 1, divided by 52, multiplied by the normal vacation pay for an employee with their record of continuous service. Employees who leave the Company after July 1 who have not received the vacation pay to which they are eligible as of July 1, will receive such payments at the time of separation.

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C. Sick Leave

1. Salaried Employees

Leave with pay may be granted to employees who are absent from work because of personal illness or injury. The amount of such leave granted shall be in accordance with established practices consistently applied throughout the Contractor's organization based upon the following schedule:

<u>Employee's Service</u>	<u>Cumulative Time Off in Any 12-Month Period</u>
Less than 6 months	1 week
6 months to 1 year	2 weeks
1 year to 2 years	4 weeks
2 years to 25 years	4 weeks plus 2 weeks for each full year of continuous service beyond 2 years up to maximum of 50 weeks
More than 25 years	50 weeks

No reimbursement shall be made for unused sick leave to employees upon termination of employment.

2. Hourly Employees

Excused leave with pay may be granted full-time employees who are absent from work for reasons of personal illness, injury, or disability based upon the following provisions:

Full-time employees with one or more years of continuous service who are on the payroll as of January 1 of any calendar year shall be credited with 40 hours of sick leave allowance for that calendar year.

Full-time employees who are not on the payroll as of January 1 but who returned to work from layoff or leave of absence subsequent to January 1 shall be credited for the balance of the calendar year with an amount of sick leave allowance equal to the number of full calendar months remaining in the calendar year times 3-1/3 hours.

Full-time employees who complete their first year of continuous service subsequent to January 1 shall be credited for the balance of the calendar year with an amount of sick leave allowance

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equal to the number of full calendar months remaining in the calendar year times 3-1/3 hours.

Full-time employees who complete their first year of continuous services on or before the 15th day of the month will be credited with a full 3-1/3 hours of sick leave allowance for that month. Allowances for regular, part-time employees will be reduced proportionately, provided they are employed to work a minimum weekly work schedule of 20 hours or more.

Unused sick leave will be accumulated from year to year up to a maximum of 480 hours. In no case will unused sick leave pay be reimbursed to employees, including separation from the company, for any reason.

Sick leave pay shall be computed at the employee's straight-time hourly rate in effect on the first full or partial day of absence. Shift premium may be added to such straight-time sick leave for employees who, if they worked, would have been assigned to a premium shift.

Employees receiving sick leave pay will not be entitled to Non-Occupational Insurance Benefits for the same period of absence. The number of weeks of Non-Occupational Disability Insurance Benefits to which an employee is entitled shall be reduced by the equivalent number of consecutive 40-hour increments (or fractional portion thereof) of sick leave pay received. Non-Occupational Disability Insurance Benefits will commence at the termination of sick pay if the employee is still unable to return to work due to personal illness or injury and has been disabled for more than seven (7) consecutive calendar days.

Payments received under Workmen's Compensation, cost reimbursed in whole or in part by the Commission, shall be deducted from the sick leave pay received by an employee during any period such payments are received. Sick leave pay will be the difference between the weekly Workmen's Compensation payment and the employee's weekly straight-time wage in effect at the time an occupational disability occurs. When such partial sick leave payments are made, the number of hours to be charged against an employee's sick leave allowance will be determined by dividing the employee's straight-time earnings into the appropriate amount of weekly sick leave pay to be granted.

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D. Other Absences

1. Court Duty

Employees may be allowed time off without loss of straight-time pay for required jury duty or for required appearance at a court trial.

- a. Hourly and Non-Exempt Salaried Employees will receive the difference between fees received from the court and their normal pay for an eight-hour day.
- b. Exempt Salaried Employees will be paid their normal salary in addition to court fees.

2. Marriage

When an employee elects to be married, he may be granted time off as follows:

- a. Hourly Employees: Up to one week off without pay.
- b. Salaried Employees: Less than 6 months service: Up to one week off without pay. Six months service or more: Up to one week with pay.

3. Death in the Immediate Family

Any employee may be granted up to three working days off with pay because of the death of the employee's spouse, father, mother, son, daughter, brother or sister, mother-in-law or father-in-law.

4. Required Military Duty

Time off for required military reserve duty, not to exceed two weeks during any twelve-month period may be granted to:

Hourly Employees - without pay

Salaried Employees

- (a) Less than six (6) months service - without pay
- (b) With more than (6) months service, the difference, if any between their salary base rate and their military pay for the period.

All employees with six (6) months or more of continuous service

who are ordered to active duty for periods of not less than six (6) months duration may receive the equivalent of one (1) month's pay upon release from employment to perform such duty unless he enlists while on an approved occupational deferment.

5. Required Selective Service Examination

Time off with pay may be granted to employees required to visit military examination centers for the purpose of taking preliminary or final type examinations. The amount paid to non-exempt employees shall not exceed eight (8) hours of straight-time pay, including shift premium, if any.

6. Personal Reasons

Time off may be granted to employees absent for personal reasons. Time off for personal reasons may be granted to hourly employees only on a non-pay basis. Non-exempt Plan B employees with six or more months of continuous service may be paid for time off not to exceed five days per year. Exempt Plan A employees with six or more months of continuous service may be paid for time off at the discretion of the Manufacturing Manager or, in his absence, the person acting in his behalf. When such time off exceeds two weeks, additional time off shall come under provisions of II. D.7., below.

7. Leave of Absence

A leave of absence without pay may be granted to employees who are absent for two or more weeks but not to exceed 18 months. Seniority or other benefits shall not be accrued during leaves of absences granted under this section.

III. WAGE AND SALARY ADMINISTRATION

A. Executive Compensation

Executive compensation including bonuses and other remunerations will, for cost-reimbursement purposes, not exceed a pro rata share of the equivalent of \$30,000 per annum for any one executive. The determination of allowable related costs based on compensations paid will also be determined on the basis of the foregoing limitation. In addition, prior Commission approval shall be obtained on the establishment or adjustment of single rates or rate ranges which exceed \$25,000 per year and on any individual salary action which involves a total compensation of \$25,000 or more per year.

B. Salary Schedules

Employees whose wages or salaries are cost-reimbursed under the Contract shall be employed in the job classification, grade and salary ranges approved under Schedules I and II attached hereto. Current organization charts, job descriptions and appropriate wage and salary data will be filed with the Commission in support of approved job classifications, grades and wage and salary ranges. Cost of living and general wage and salary adjustments require the prior approval of the Commission.

C. Increases and Promotions

1. Salaried Employees

It is the policy of the Contractor to base the employee's salary on his production and accomplishments in terms of the requirements of his job classification and the rate range for the classification. Reclassification, promotions and merit raises may be made at the discretion of the Contractor in accordance with established practices and procedures. Salaried employees may be considered for merit increases in accordance with the following schedule.

<u>Employee's Place in Rate Range</u>	<u>Interval Between Merit Increases</u> <u>Salaried Employees</u>	
	<u>Non-Exempt</u>	<u>Exempt</u>
Below mid-point of salary range	6 months	12 months
Above mid-point, not immediately promotable	12-18 months	18-24 months
Above mid-point, immediately promotable	6 months	12 months

A non-exempt salaried employee's job performance shall be reviewed semi-annually and he may receive an increase of up to 5% of his base rate at each semi-annual review. Merit increases for exempt salaried employees shall not be granted less than one year from the preceding merit or promotional increase except in unusual cases, and in no case shall they exceed 10% per year. Exceptions may be granted only with the prior approval of the Commission. No merit increase shall be given in excess of the established maximum rate for the position of the exempt or non-exempt salaried employee.

2. Hourly Employees

Merit raises within the appropriate labor grade may be given once every three calendar months. In unusual circumstances a merit raise may be given after two calendar months have elapsed after a previous merit increase. New hires may receive a merit increase at the conclusion of a 45-day probationary period. New hires with trainee classification may be promoted to their regular classification and brought to their first step of the appropriate labor grade at the conclusion of a 45-day probationary period.

D. Leadman Premium (Hourly Employees)

An employee officially designated as a "Leadman" may be paid a 10% premium in addition to his hourly rate.

E. Shift Differential

Premium pay of 10% of straight time and overtime earnings will be paid for work on shifts commencing outside the hours of 7:00 a.m. to 9:00 a.m.

F. Compensation for Premium Time - Overtime and Holiday Work

As deemed essential to the performance of Contract work, the Contractor may authorize occasional overtime. Work weeks in excess of 40 hours scheduled for more than four consecutive weeks shall require prior approval of the Commission. Payments for overtime work shall be in accordance with the Federal Wage and Hour Law and the Contractor's established pay practices.

Regular employees may receive their regular straight time pay, not to exceed eight hours (including shift premium if applicable) for unworked official holidays.

If a non-exempt salaried or hourly employee is required to work on an official holiday, he will be compensated for the hours worked at one and one-half times his normal rate of pay including shift differential in addition to the basic eight hours holiday pay.

G. Report-in Pay

An employee who reports to work for his scheduled hours will receive full pay from such hours (not to exceed 8) for that day even though idle or sent home early because of delay or shortage or other reasons beyond his control, except that no such pay shall be made in cases where the Company's failure to provide work is due to power failure, fire, flood, weather conditions, or other conditions beyond the Company's control.

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H. Call-in Pay (Non-exempt Salaried and Hourly Employees)

Employees who are called in for emergency work outside their regularly scheduled hours may be paid at overtime rates for such hours worked or a minimum of four hours straight time, whichever is greater.

I. Separation Pay

1. Separation Pay in Lieu of Notice

Employees with six (6) months or more of continuous service who are permanently and involuntarily separated without prejudice will receive notice or separation pay in lieu of notice as indicated below:

- a. Hourly Employees - One (1) week's notice or one (1) week's pay at base rate, not to exceed 40 hours.

Should an hourly paid employee be separated because of lack of work while assigned to commercial work at the Hicksville Plant and "bump" through seniority rules an employee on Contract work, it is agreed the Commission shall not be liable for separation pay to the separated employee. Where an employee engaged on Contract work at the Hicksville Plant "bumps" a less senior employee assigned to commercial work, the Commission shall reimburse the Company, if required, for separation payments to the employee thus separated. In all instances where the Commission reimburses for separation pay to employees not engaged on its work at time of separation, payments must be approved by the Commission.

- b. Non-Exempt Salaried Employees - Two (2) weeks' pay and as much notice as possible. An additional one week's pay may be granted to employees having five (5) or more years of continuous service.

Separation pay to eligible employees whose total Company service has been divided between the Contractor's commercial activities and work under this Contract shall be prorated according to length of service on Contract work and the Company's commercial activities.

- c. Exempt Salaried Employees - Four (4) weeks pay or until the employee secures new employment for employees with up to five (5) years continuous service. An additional one (1) week's pay for each year, or portion thereof, of continuous service in excess of 5 years service or until the employee secures

new employment except that in no instance shall the employee receive more than 15 weeks separation pay. Separation pay to eligible employees whose total Company service has been divided between the Contractor's commercial activities and work under this Contract shall be prorated according to length of service on Contract work and the Company's commercial activities.

2. Severance Pay - Hicksville Site Closing

Reimbursement will be made to the Company for severance payments only in the event that the Hicksville site is closed because of termination or expiration of this Contract. Severance payments made to employees whose total service has been divided between the Contractor's commercial work and work under this Contract shall be prorated according to the length of service on Contract work and commercial work. Employees whose employment is terminated because of the closing of the Hicksville site may receive severance pay in accordance with the sections of Sylvania Electric Products, Inc., Policy and Standard Practice entitled "Reassignment or Separation of Employees when a Plant or other Facility is Being Permanently Closed" and "Separation Policy-Plan 'A' Employees" further identified as No. 313. (Supplements 2 and 4) issued October 1, 1963.

IV. EMPLOYEE BENEFITS

A. Educational Benefits

When an employee is assigned to an educational course as part of his work under this Contract, the Contractor may pay the cost of the course, including books and required travel expenses.

Employees who elect to take educational courses may be reimbursed by the Contractor as outlined below.

1. The employee must obtain approval of the Plant Manager prior to enrolling in the course.
2. Upon completion of the course and before reimbursement for any part of the course cost is made, the employee shall provide acceptable evidence of successful completion and appropriate properly receipted bills.
3. If the course is directly related to the performance of Contract work, 100% tuition will be refunded upon satisfactory completion of the course.

4. If the course is not directly related to the employee's present work but is related to the employee's development for higher level work in which there is a reasonable probability that he may be engaged under the Contract, 50% of the tuition may be refunded upon satisfactory completion of the course.
5. If the course is not directly related to Contract work but part of the requirement for a degree in a field directly related to the Contract work in which the employee is engaged, 50% of the tuition may be refunded upon satisfactory completion of the course.

In addition to the benefits outlined above, up to six hours time off per week with pay may be granted to employees who take approved graduate-level courses related to this Contract.

B. Group Insurance

The Contractor maintains group insurance program for all eligible and retired employees including: 1) life insurance, 2) accidental death and dismemberment insurance, 3) insurance for company travel, 4) hospital-surgical-medical insurance, 5) major medical insurance, and 6) non-occupational disability insurance, the details of which are on file and approved by the Commission. The Contractor's contribution to the cost of the program is reimbursable on a pro rata share basis as approved by the Commission. A proper share of dividends, premium refunds, and other credits accrued to the approved group insurance program will be credited to the cost of Contract work. The following group insurance programs are provided by the Contractor.

1. Life Insurance is provided for all regular employees at no cost to the employee after one month of Company service. The amount of insurance is determined by the employee's base rate of pay. The face value of the life insurance per eligible employee will be a minimum of \$3,000 and a maximum of \$225,000. Insurance coverage may be extended up to one year during a period an employee is totally disabled.
2. Accidental Death and Dismemberment Insurance is provided for all regular employees at no cost to the employee after one month of Company service. The amount of insurance is determined by the employee's base rate of pay, with a minimum of \$3,000 and a maximum of \$20,000 for any one accident. Insurance coverage may be extended up to one year during the period an employee is totally disabled.
3. Insurance for Company Travel is provided at no cost to the employee to cover death while an employee is traveling on, and as a result

of, Company business. The amount of death insurance will be two times the employee's base annual salary, subject to a minimum of \$25,000 and a maximum of \$150,000.

4. Hospital-Surgical-Medical Insurance is provided for regular employees at no cost to the employee after one month of Company service. The insurance covers the employee and his dependents. Insurance coverage may be extended up to one year during a period an employee is totally disabled.
5. Major Medical Insurance is provided for all regular employees at no cost to the employee after one month of Company service. Major Medical Insurance is in addition to the basic Hospital-Surgical-Medical Insurance. Insurance coverage may be extended up to one year during a period an employee is totally disabled.
6. Non-Occupational Disability Insurance is provided to all employees at no cost to the employee immediately upon employment if the employee was a covered employee working for a covered employer within the preceding six months or after 28 calendar days of employment. Benefits under this plan begin eight (8) days after a non-occupational illness or injury. Payments under this policy are made in lieu of salary or wages in an amount equal to one-half of the normal weekly pay, but not to exceed \$65 per week. Benefits under this policy for any one accident or illness may not be paid for more than 26 weeks.

C. Pension Plan

A non-contributory Pension Plan is provided all employees of the Contractor, the details of which are filed with and approved by the Commission.

D. Savings and Security Plan

Regular employees with one year of continuous service may participate in a voluntary Savings and Security Plan as filed and approved by the Commission. Under the Plan participating employees contribute 3% of their earnings by payroll deductions and the Contractor contributes 6% of its net profits before Federal tax based on income for each year but not to exceed an amount equal to the total amount contributed by the members and not withdrawn during the year.

V. TRAVEL, TRANSPORTATION, SUBSISTENCE, AND MOVING EXPENSES

A. Travel, Transportation and Subsistence

Travel incurred by employees, consultants and prospective employees

in connection with the performance of contract work may be reimbursed as follows:

1. The actual cost of transportation by common carrier, or \$.08 per mile plus highway, bridge, ferry and tunnel tolls when travel by vehicle is authorized.
2. The reasonable actual cost of lodging in accordance with prevailing locality rates plus an allowance not in excess of \$7.50 per day for subsistence.
3. The actual cost of necessary telephone calls, telegrams, and incidental transportation and personal expenses.

B. Moving and Relocation Expenses

Key scientific, technical and professional employees moving and relocation expenses to plants operated in connection with the performance of contract work may be reimbursed as follows:

1. Transportation expenses for an employee and dependents as in A. 1. above.
2. The reasonable actual cost of lodging plus a subsistence allowance not in excess of \$7.50 per employee, \$6.00 for each dependent over 12 years of age and \$4.00 for each dependent 12 years of age and under while enroute from place of permanent residence to transferred location.
3. A living expense allowance not to exceed \$9.00 per day for thirty (30) days to cover additional living expenses of an employee where family remains at principal place of permanent residence at time of transfer. In addition, the incurred cost of two (2) round trips from place of work to principal place of permanent residence during this period.
4. Reasonable travel expenses incurred by an employee's wife in making visits not in excess of two round trips to new location prior to transfer of residence with such expenses reimbursed in accordance with A.1., 2., and 3. above; or, if traveling with husband, in accordance with B.1., and 2. above.
5. Reasonable brokerage fees not to exceed 5% of sale price plus legal and other necessary closing fees in connection with the sale of principal place of permanent residence at the old location; or, a reasonable cancellation fee not to exceed the equivalent of three (3) months' rental in connection with the breaking of a lease on a

rented house or apartment.

6. Legal fees and other unavoidable expenses not to exceed 3% of the purchase price in connection with the purchase of a residence at the new location.
7. The cost of real estate taxes, fire insurance, and interest on the mortgage on the old house not in excess of the equivalent of one month's payment when it is necessary for an employee to take title to a house in the new location without completing the sale and transfer of title to his house at the old location.
8. The reasonable cost of transportation of household goods and effects including packing, crating, insurance, unpacking, disconnecting and connecting equipment and for temporary storage of house hold goods and effects not in excess of thirty (30) days.
9. Incidental relocation expenses not to exceed 50% of one (1) month's base salary for an employee who owns and transfers household goods to the new location.
10. When at the Contractor's request an Exempt Plan A employee is transferred from another Sylvania location to the Hicksville site, reimbursement consistent with Sylvania commercial practice as defined in its Policy and Standard Practice Manual dated February 15, 1963, may be made for a loss sustained by the employee in the sale of his residence. It is understood that this policy shall be applied uniformly to all company Plan A employees and that reimbursement for such a loss is limited to its occurrence upon the transfer of an employee to the Hicksville site to perform work on Contract AT(30-1)-1293 and not applicable to its occurrence upon the transfer of an employee performing work on Contract AT(30-1)-1293 from the Hicksville site to another location. Reimbursement of any loss in excess of \$500 shall be subject to the Commission's prior approval.

C. New Hires - Key Scientific, Technical and Professional Employees

Travel and moving expenses incurred by new hires in connection with Contract work may be reimbursed as follows:

1. Transportation and moving expenses for an employee and dependents as in V.A.1., B.2., and B.8.
2. Reasonable cost of room and board for two weeks and reasonable travel expenses incurred by an employee or his wife in making visits not to exceed two round trips between new location and former residence if the new employee relocates before moving his

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family.

VI. MISCELLANEOUS EXPENSES AND ALLOWANCES

A. Pre-Employment Physical Examination

Reimbursements may be made for the expense of pre-employment physical examinations performed by a non-company physician when such examinations are necessary for the placement of an individual on Contract work. Such reimbursements will not exceed \$35 for any one individual.

B. In-Plant Training Courses

The reasonable costs of in-plant training courses deemed essential and of benefit to the performance of Contract work are approved as allowable Contract costs.

C. Outside Training and Meetings

When it is in the interest of the Contract for an employee to participate in outside training at the request of the Contractor or attend scientific, technical, or professional meetings, the cost of such training or attendance is an allowable cost under the Contract. Participation in outside training or attendance at meetings for a period of five (5) working days or more and all foreign travel incurred in connection therewith, will require the prior approval of the Commission.

D. Licenses, Professional Society Memberships, and Magazine Subscriptions

1. When professional licenses are considered essential to the performance of Contract work or where an employee is the official representative of the Contractor or attends meetings of engineering, management or professional societies as part of his work, reimbursement may be made for the actual costs of such licenses, dues or memberships, and magazine subscriptions.
2. Where employee subscriptions to technical magazines, professional licenses, or memberships in scientific, engineering or professional societies are considered of benefit to the performance of Contract work, reimbursements may be made up to one-half the costs of such subscriptions, licenses or memberships.

E. Publication Awards

Employees may receive token awards not to exceed \$50 for publications of technical papers in technical journals which are of interest to the Contract and for which no compensation has been received from the

publisher.

F. Employee Social and Recreational Activities

Costs incurred as Contractor contributions to employee social and recreational activities may be made in an amount not exceeding the equivalent of 9 cents per week per employee.

G. Supper Money

Reasonable supper money allowances may be paid to exempt employees when they are not receiving overtime pay and work $2\frac{1}{2}$ hours or more past the end of their standard shift. Non-exempt salaried and hourly employees, who receive overtime wages, will not receive supper money.

H. Employment Agency Fees

When employment agency services are required to secure properly qualified personnel for the performance of Contract work, agency fees for such services may be reimbursed in an amount not exceeding 10% of an employee's base annual wage or salary.

I. Printed Material

A pro rata share of the cost of printed material which is distributed to employees for training, information and indoctrination under the Contract is reimbursable.

J. Clothing Loss

Damage to or loss of employee clothing and personal property as the result of the performance of Contract work and not attributable to the employee's carelessness or negligence will be reimbursed. The amount of reimbursement will be based on replacement cost minus a fair depreciation estimate.

K. Personal Protective Equipment

The Contractor will be reimbursed for the cost of providing employees with required personal protective equipment or clothing in accordance with the Contractor's established policies and practices.

L. Patent Awards

The Contractor may be cost reimbursed in amounts not to exceed \$100 per employee under the Contractor's Patent Award Program for patents granted and assigned to the Commission. Where the invention or dis-

covery is of particular importance or value to the Commission, additional awards may be granted with prior written Commission approval.

M. Suggestion Awards

The Contractor may be reimbursed on a pro rata share basis for the reasonable cost of a Suggestion Awards Program. Hourly and non-exempt salaried employees on jobs which require working out improvements, developments, or new ideas shall be eligible for awards for only those suggestions which apply outside the scope of their own responsibility, duties, or assignments. Exempt employees shall not be eligible for suggestion awards. The minimum award is \$7.50. The maximum award is \$25,000. Reimbursement of any award in excess of \$250 for any one employee or \$500 for any employee group shall be subject to the approval of the Commission. The Contractor will provide the Commission with such data as may from time to time be required for appraisal and substantiation of costs incurred under the program.

O. Family Day

The Contractor may be reimbursed on a pro rata share basis for the reasonable cost of holding an annual "Family Day - Open House" program. Reimbursement shall be subject to prior approval of the Commission.

P. Cooperative Student Work Program

When it is in the interest of the contract to afford engineering or scientific students employment under a cooperative arrangement with an accredited college or university that has a bona fide and established cooperative student work program in accredited, engineering and/or scientific disciplines, reimbursement may be made for expenses as follows:

1. Travel and Related Expenses for the Student's Initial Interview

- a. The actual cost of transportation between the school and the contractor plant site by common carrier, or \$.08 per mile plus highway, bridge, ferry and tunnel tolls when travel by private passenger vehicle is used.
- b. The reasonable actual cost of lodging plus an allowance not in excess of \$7.50 per day for subsistence.
- c. The actual cost of necessary telephone calls, telegrams, and incidental transportation expenses.

2. Travel and Relocation Expenses

- a. Travel as described in A.1., above between the school and the contractor's plant site for each 6 months term of work where the student ordinarily lives (except when in school) more than 50 miles from the contractor's plant site.
- b. The reasonable actual cost of lodging plus a subsistence allowance not in excess of \$7.50 per day while in travel status.
- c. In order to allow the student time to find housing, the reasonable actual cost of lodging not to exceed \$7.50 per day for a period up to one week (7 days) on the initial work term and up to 3 days on subsequent work terms and approved by the contractor on an individual basis.

3. Salaries

Students working under a cooperative program and performing work on the contract will be paid according to the following scale:

	<u>Work Term*</u>	<u>Weekly Salary</u>
Co-op Student 1	(1	\$78.00
	(2	82.00
Co-op Student 2	(3	90.00
	(4	94.00
Co-op Student 3	(5	102.00
	(6	106.00
Co-op Student 4	(7	114.00
	(8	114.00

* Each term represents 3 months

4. Continuity of Service

The student's return to school work at the end of each work term will, for the purpose of calculating company benefits, be regarded as a resignation and service will not accumulate from one term to another unless and until the student ceases to work under the cooperative program and becomes a full time regular employee. At such time as the student becomes a full time regular employee all company benefits will be applicable to the student and credit will

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be given for the full time he worked under the cooperative program.

5. Other Benefits

Cooperative students will not be eligible for all company benefits but may be treated the same as a regular employee under Appendix "A" for the following:

Section II	A	Holidays
Section III	D - 1	Court Duty
	D - 3	Death in Immediate Family
	D - 5	Required Selective Service Examinations
Section IV	B	Group Insurance

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SCHEDULE I

SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Manufacturing Manager	13 J	\$1150 - \$1905
Engineering Manager "B"	12 J	1035 - 1710
Engineering Specialist Plant Manager "C" Section Head	11 J	940 - 1555
Manufacturing Superintendent Supervisor of Product Engineering Advanced New Product Development Engineer-Sylcor	10 J	855 - 1410
Advanced Research (or Development) Engineer Engineer-in-Charge Supervisor of Quality Control "A" Senior Sales Engineer	9 J	765 - 1260
Equipment Design Specialist General Foreman Project Engineer Research (or Development) Engineer Supervisor of Cost Control "A"	8 J	690 - 1145
Safety Engineer, Sylcor Research Metallographer Senior Engineer "A" Supervisor, Production Control "B" Supervisor, Quality Control "B" Supervisor of Personnel "B"	7 J	635 - 1045

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SALARIED EMPLOYEES

Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Monthly Salary Range</u>
Contract Administrator Equipment Designer, Sr. Purchasing Agent "A" Senior Engineer "B" Supervisor of Security and Administrative Service Supervisor of Maintenance "B" Toolroom Foreman Foreman Class I Tool Coordinator	6 J	\$ 590 - \$ 965
Buyer Cost Analyst & Statistician Supervisor of An Accounting Department Section	5 K	550 - 890
Engineer Foreman, Nuclear Products Industrial Engineer Accountant, Senior Foreman II Personnel Assistant Systems and Procedures Analyst, Jr. Equipment Designer	4 K	510 - 815
Cost Accountant	3 K	470 - 745

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Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Weekly Salary Range</u>
Master Craftsman Technical Associate	64	\$126 - \$190
Designer-Draftsman	63	118 - 176
Material Requirements Analyst Production or Maintenance Supervisor I Technician, Senior Production Scheduling Clerk Job Estimating Clerk Accountability Supervisor	62	109 - 166
Draftsman Accountant, Junior Production or Maintenance Supervisor II Safety Inspector Plant Protection, Supervisor	60	97 - 148
Employment Interviewer & Counselor Buyer, Junior Nurse, Senior Technician Stock Clerk Production Control Clerk	59	91 - 138
Payroll Accountant Purchasing Clerk Secretary, Senior	58	86 - 130

Revised October 1, 1963

Contract No. AT(-1)-1293 with
Sylvania Electric Products Inc.,
Sylcor Division
Appendix "A"

SCHEDULE I

SALARIED EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Weekly Salary Range</u>
Draftsman, Junior Nurse Production Section Leader	57	\$82 - \$123
Production Control Clerk, Junior Technician, Junior Secretary Accounting Clerk, Senior Stock Clerk, Junior Statistical Clerk, Senior	56	77 - 114
Clerk, Senior	55	74 - 106
Accounting Clerk, Junior Technical or Statistical Clerk Telephone Operator II	54	71 - 98
Clerk-Typist	52	71 - 86

General Wage Increase - Effective September 2, 1963

Revised October 1, 1963

Contract No. AT(-1)-1293 with
Sylvania Electric Products Inc.,
Sylcor Division
Appendix "A"

SCHEDULE II

HOURLY EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Hourly Salary Range</u>
Tool, Die & Model Maker "A"	IG 12	\$3.05 - \$3.66
Machinist "A" Electrician Specialist Inspector "A" Sheet Metal Specialist	IG 11	2.88 - 3.49
Mechanic "A" Welder "A" Sheet Metal Worker "A" Electrician "A" Welder I Machinist I	IG 10	2.72 - 3.28
Machinist "B" Carpenter Inspector "B"	IG 9	2.56 - 3.08
Mechanic "B" Process & Equipment Checker Assembly & Furnace Brazing Rolling Mill Operator Melter Guard Sergeant Fluoroscope Operator & X-Ray Inspector Radiographist	IG 8	2.41 - 2.92

General Wage Increase - Effective September 2, 1963

Revised October 1, 1963

Contract No. AT' -1)-1293 with
 Sylvania Electric Products Inc.,
 Sylcor Division
 Appendix "A"

SCHEDULE II

HOURLY EMPLOYEES

Non-Exempt

<u>Job Classification</u>	<u>Grade</u>	<u>Hourly Salary Range</u>
Armed Guard	IG 7	\$2.24 - \$2.73
Armed Courier		
Storekeeper		
Machinist "C"		
Inspector "C"		
Chemical Room Operator		
Machining Operator-CPP		
Sodium Loading Dry Box Operator		
Briquetting Operator		
Heat Treatment Operator		
Hot Pressing Operator-VB		
Welding Operator-VB		
Machining Operator-VB		
Fluoroscope Operator		
Hot Press Operator		
Finishing Operator		
Maintain Chemical Solutions		
Materials Stock Clerk	IG 6	2.14 - 2.56
Mechanic "C"		
Canning-Hot Press Operator		
Canning-Assembler		
Die Processing Operator		
Machining Operator-AEC		
Plating Machine Operator		
Fabrication Operator		
Rack Maintenance Man		
Groundskeeper	IG 5	2.02 - 2.41
Trainee, Production		
Maintenance Apprentice	IG 4	1.91 - 2.26
Cafeteria-Dishwasher, Porter	IG 3	1.81 - 2.13
Janitor-Porter		

General Wage Increase - Effective September 2, 1963

Revised October 1, 1963

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

October 2, 1963

Randall G. Erdley, Chief
Savannah River Patent Group

CONTRACT AT(30-1)-1293 WITH SYLVANIA ELECTRIC PRODUCTS, INC.

CP:AFW:cm

The subject contract has been extended from October 1, 196~~2~~⁴ to
September 30, 196~~4~~⁵ by a TWX dated September 27, 196~~3~~⁴.

Sylvania Electric Products, Inc. has submitted a voucher request-
ing payment of a fee retainer for the fiscal year ending June 30,
196~~3~~⁴ in the subject contract.

It would be appreciated if you would furnish an interim patent
clearance certificate for the period ending June 30, 196~~3~~⁴.

cc: H. S. Potter, NYOO

P.S. to Potter: Please advise if we may be of any assistance
in this matter.

OFFICE ▶	Patent Br.					
SURNAME ▶	R.G. Erdley					
DATE ▶	10-2-63					

~~SECRET~~

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division
James R. Jakes
FROM : *for* A. Y. Morgan, Director
Budget & Finance Division

DATE: NOV 21 1963

SUBJECT: REVIEW OF SYLCOR PROPOSAL P-64-2

Document No. SR-FB-993

FB:MER:ac

This document consists of 5 pages.

No. 1 of 8 copies. Series A

We have reviewed Sylcor's Revised Proposal (P-64-2) for the period 10/1/63 to 9/30/64 and have the following comments, cost comparisons and contract finance information:

Comments

The revised proposal is based on a level of production which is below the amount of production which is required to achieve optimum unit costs. However, we believe that the estimates included herein represent as reasonable an approximation as can be made in the period of declining production. An amount has been included for Du Pont tooling — an amount which may not be required; but we recommend including the amount in the contract in the event tooling orders are placed.

After V-E production is completed in March of FY 1964, the key engineers who have devoted their time to Mark V-E production will then direct their effort to development problems associated with lowering the unit cost and improving the stability of natural uranium elements.

The amounts included herein for operating costs are below the amounts included in the FY 1964 Budget for Sylcor.

We recommend the proposal be accepted as submitted with the reservation that the fee will be adjusted in the event the tooling does not materialize.

Cost Estimates

	Actual 10/1/62 9/30/63	Estimates P-64-1	Estimates P-64-2
	(In Thousands of Dollars)		
Direct Labor	\$1,022	\$ 773	\$ 732
Direct Materials	919	720	611
Overhead	1,137	902	873
G & A	201	182	176
Subtotal	\$3,279	\$2,577	\$2,392

DEPARTMENT OF ENERGY - SAVANNAH RIVER RESEARCH ESTABLISHMENT - ATOM REVIEW

Determination (Circle Number)
 1. Classification Unchanged
 2. Classification Changed to:
 3. Classification Canceled
 4. Other: CG-NR/P-2 9-00

1st Review Date: 4/13/63
 Authority: ADCC/D/ADD
 Name: OB Black

2nd Review Date: 1/13/63
 Authority: ADD
 Name: Norm J. Jakes

GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

UNCLASSIFIED

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~~SECRET~~

J. S. Hopkins

- 2 -

NOV 21 1963

	Actual 10/1/62 9/30/63	Estimates P-64-1	Estimates P-64-2
	(In Thousands of Dollars)		
Fee	\$ 198	\$ 155	\$ 144
Purchased Equipment	174	121	114
Total Costs	<u>\$3,651</u>	<u>\$2,853</u>	<u>\$2,650</u>

Ratio Overhead to			
Direct Labor	111%	117%	119%

The increases in ratios were discussed with Sylcor. They contended that certain overhead items such as rent and division prorates cannot be reduced in direct proportion to direct labor. Therefore, although overhead in total decreases, the proportion to direct labor increases. There is no evidence to refute their contention. So, we accept as reasonable, under the conditions, their overhead estimates.

The G & A estimate is also considered to be reasonable under existing conditions.

Cost by Program

Mark VII-A	\$ 440	\$ -	\$ -
Mark V-B	2,145	1,531	1,278
Mark V-E	262	828	786
Thorium	121	12	12
Development	303	182	230
Tooling	29	-	49
Fabricated Equipment	177	179	181
Purchased Equipment	174	121	114
Total	<u>\$3,651</u>	<u>\$2,853</u>	<u>\$2,650</u>

Production Lbs.

Mark VII-A	440,000	-	-
Mark V-B	1,181,000	1,488,000	1,030,000
Mark V-E	35,000	292,000	292,000

Unit Cost/Lb.

Mark VII-A	\$ 1.00	\$ -	\$ -
Mark V-B	1.82	1.03	1.24
Mark V-E	7.60	2.83	2.70

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USDOE 017838

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J. S. Hopkins

- 3 -

NOV 21 1964

We were concerned with the high unit cost of Mark V-E and discussed the matter with Sylcor. Sylcor contended that the quantities to be canned were pilot quantities, and since the dimensions of the V-E are such that they cannot be handled in the current press, the canning is to be done in the research facilities essentially "by hand" and that these are the best estimates they can make. Based on pilot quantities of new elements canned in past periods, the estimates are, therefore, not considered unreasonable.

The Mark V-B estimate increases from the initial FY 1964 estimate because of decreases in production.

The estimate for development is about \$30,000 more than included in the FY 1964 Budget but the increase can be absorbed by under-runs by other contractors in the O2 development program.

Cost and Fee by Program

	P-64-2		
	<u>Cost</u>	<u>Fee</u>	<u>Total</u>
Mark V-B	\$1,196,280	\$ 82,650 ^{a/}	\$1,278,930
Mark V-E	741,930	44,515	786,445
Thorium	11,200	670	11,870
Tooling *	46,110	2,766	48,876
Development	215,820	12,841 ^{b/}	228,661
Fabricated Equipment	181,240	a/	181,240
Purchased Equipment	114,200	-	114,200
Total	<u>\$2,506,780</u>	<u>\$143,442</u>	<u>\$2,650,222</u>

a/ Includes fee on Fabricated Equipment of \$10,874.

b/ Fee adjusted by \$108 which represented estimated cost of \$1,800 work on Zr cladding for which the fee was paid in Modification 34.

Fee Base

Direct Labor	\$ 732,060
Direct Materials	611,480
Overhead	873,150
G & A	175,890
Subtotal	\$2,392,580
Zr Cladding (Mod. 34)	(1,800)
Fee Base	<u>\$2,390,780</u>
Fee @ 6%	\$ 143,447 Rounded to \$143,442

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USDOE 017839

J. S. Hopkins

NOV 21 1963

Conclusion

We recommend that the proposal be accepted as submitted with the provision that the fee will be adjusted if the tooling does not materialize.

Contract Finance Information

Contract Cover Sheet (Modification 35)

Recapitulation of Estimated Costs and Commission Obligation

	<u>Mod. 34</u>	<u>Increase (Decrease)</u>	<u>Mod. 35</u>
<u>Summary of Estimated Costs and Fixed Fee</u>			
<u>Operating Cost</u> ^{1/}	\$26,523,671	\$2,179,980	\$28,703,651
<u>Plant and Equipment (Beginning July 1, 1963)</u>	123,932	249,100 ^{2/}	373,032 ^{2/}
<u>Fixed Fee (Operations)</u>	<u>1,488,615</u>	<u>143,442</u>	<u>1,632,057</u>
<u>Total Estimated Costs and Fixed Fee</u>	<u>\$28,136,218</u>	<u>\$2,572,522</u>	<u>\$30,708,740</u>
<u>Commission Obligation (as of November 1, 1963)</u>			<u>\$29,026,218</u>

^{1/} Includes Plant and Equipment prior to 7/1/63.

^{2/} Includes \$35,000 for first quarter FY 1965 authorizations not to be obligated in FY 1964.

Contract Articles (Financial)

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - Estimates of Costs, Obligation of Funds, and Fixed Fee, is revised to read as follows:

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J. S. Hopkins

- 5 -

NOV 21 1963

29,076,683
1,632,057
30,708,740

(1) Estimate of Cost and Fixed Fee - The presently estimated cost of the work under this Contract is \$29,076,683, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in Paragraph 2., Article V of the Contract, is \$1,632,057. The estimated cost of the work, as described in Paragraph 1. of the Article entitled Scope of Work, for the period October 1, 1963, to September 30, 1964, is \$2,506,780, exclusive of the Contractor's fixed fee of \$143,442.

2. Change first sentence in Paragraph 2., Obligation of Funds, of Article IV - Estimates of Cost, Obligation of Funds and Fixed Fee to read:

The amount presently obligated by the Government with respect to this Contract is \$29,026,218.

3. The following new subparagraph (e) is added to Paragraph 2., Fixed Fee of Article V - Allowable Cost and Fixed Fee:

(e) The fixed fee applicable to the work performed during the period October 1, 1963 to September 30, 1964 is \$143,442.

4. The following new subparagraph (e) is added to Paragraph 2., Payment of Fixed Fee, of Article VI - Payments:

(e) For the period October 1, 1963 through September 30, 1964, ninety per cent (90%) of the fixed fee of \$143,442 shall become due and payable in monthly installments of \$10,758.

cc: J. J. Wise, Asst. Manager for Admin.
N. J. Donahue, T&P Division
E. W. Stark, Accounting Branch
R. A. Messick, Contract Fin. Branch

~~SECRET~~

USDOE 017841

D. S. Zachry, Chief
Oak Ridge Patent Group

December 12, 1963

Randall G. Erdley, Chief
Savannah River Patent Group

CONTRACT NO. AT-(30-1)-1293 -- SYLVANIA ELECTRIC PRODUCTS, INC.

CP:AF04mls

In response to your memo of December 4, 1963, enclosed is a copy of the latest interim patent clearance certificate for the subject contract which covers the last fiscal year period ending June 30, 1963.

SROO Contracts Branch has informed us that this contract has been extended to September 30, 1964. Since in the past, the patent investigation has been conducted by the New York Patent Group and interim certificates have been issued regularly on a fiscal year basis, we do not expect another interim clearance until after June 30, 1964.

If we may be of further assistance, please let us know.

Enclosure:

Copy: Interim Patent Clearance Certification

OFFICE ▶	Patent Br.					
SURNAME ▶	A. H. P. R.					
DATE ▶	12/12/63					

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *A. Y. Morgan*
A. Y. Morgan, Director
Budget & Finance Division

DATE: JAN 7 1964

SUBJECT: SYLCOR PROPOSAL P-64-2

Document No. SR-EB-1004

FB:MER:ac

This document consists of 3 pages.

No. 1 of 8 copies, Series A

DEPARTMENT OF ENERGY-SAVANNAH RIVER DECLASSIFICATION REVIEW

Determination (Circle Number)
 1. Classification Unchanged
 2. Classification changed to:
 3. Classification Canceled
 4. Other: CG-NM-1 9-001

1st Review Date 4/3/63
 Authority: ABC ADD
 Name: G. B. Wallace

2nd Review Date 9/16/63
 Authority: ADD
 Name: Norman J. Henderson

Please refer to my memorandum of November 21, 1963. As a result of revisions in the Du Pont tooling estimates as discussed by Wise, Coker, Thorne, and Donahue, the following are the revised estimates to be used in Modification 35 to the Sylcor Contract.

	P-64-2 Original	Revised	Change
Direct Labor	\$ 732,060	\$ 722,999	\$ (9,061)
Direct Materials	611,480	598,966	(12,514)
Overhead	873,150	861,724	(11,426)
G & A	175,890	172,781	(3,109)
Adjustments	(1,800)	(1,800)	-0-
Subtotal (Fee Base)	\$2,390,780	\$2,354,670	\$(36,110)
Fee @ 6% (Rounded)	143,442	141,276	(2,166)
Purchased Equipment	114,200	114,200	-0-
Add Back Adj.	1,800	1,800	-0-
Total	<u>\$2,650,222</u>	<u>\$2,611,946</u>	<u>\$(38,276)</u>

The net effect of the above change is a reduction in the tooling estimate of \$38,276 including a fee reduction of \$2,166. The revised tooling estimate is \$10,600 including a fee of \$600.

The cost and fee by program should be revised as follows:

Item	Labor	Materials	Overhead	G & A	Fee	Total
Mark V-B	\$317,190	\$389,200	\$390,440	\$ 99,450	\$ 82,650 ^{a/}	\$1,278,930
Mark V-E	254,280	157,600	277,800	52,250	44,515	786,445
Thorium	4,700	1,000	4,730	770	670	11,870
Tooling	2,509	3,466	3,164	861	600	10,600
Development	81,230	8,700	106,440	19,450	12,841 ^{b/}	228,661
Fab. Equip.	63,090	39,000	79,150	-0-	^{a/}	181,240
Pur. Equip.	-0-	-0-	-0-	-0-	-0-	114,200
Total	<u>\$722,999</u>	<u>\$598,966</u>	<u>\$861,724</u>	<u>\$172,781</u>	<u>\$141,276</u>	<u>\$2,611,946</u>

^{a/} Includes fee of \$10,874 for Fabricated Equipment.

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USDOE 017833

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J. S. Hopkins

- 2 -

JAN 7 1964

b/ Fee adjusted by \$108, which represents estimated cost of \$1,800 work on zirconium cladding for which fee was paid in Modification 34.

The contract finance information should be revised to read as follows:

Contract Cover Sheet (Modification 35)

Recapitulation of Estimated Costs and Commission Obligations

	<u>Mod. 34</u>	<u>Increase (Decrease)</u>	<u>Mod. 35</u>
Summary of Estimated Costs and Fixed Fee			
<u>Operating Costs^{a/}</u>	\$26,523,671	\$2,143,870	\$28,667,541
<u>Plant and Equipment</u> Beginning July 1, 1963	123,932	249,100 ^{b/}	373,032 ^{b/}
<u>Fixed Fee</u> (Operations)	<u>1,488,615</u>	<u>141,276</u>	<u>1,629,891</u>
Total Costs & Fee	\$28,136,218	\$2,534,246	\$30,670,464
Commission Obligation as of January 1, 1964			<u>\$29,326,218</u>

a/ Includes plant and equipment prior to 7/1/63.

b/ Includes \$35,000 for first quarter of FY 1965 authorization not to be obligated in FY 1964.

Contract Articles (Financial)

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - Estimates of Costs, Obligation of Funds, and Fixed Fee, is revised to read as follows:

- (1) Estimate of Cost and Fixed Fee - The presently estimated cost of the work under this Contract is \$29,040,573, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in Paragraph 2., Article V of the Contract, is \$1,629,891. The estimated cost of the work, as described in Paragraph 1. of the Article entitled Scope of Work, for the period October 1, 1963, to September 30, 1964, is \$2,470,670, exclusive of the Contractor's fixed fee of \$141,276.

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USDOE 017834

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J. S. Hopkins

- 3 -

JAN 7 1964

2. Change first sentence in Paragraph 2., Obligation of Funds, of Article IV - Estimates of Cost, Obligation of Funds and Fixed Fee to read:

The amount presently obligated by the Government with respect to this Contract is \$29,326,218.

3. The following new subparagraph (e) is added to Paragraph 2., Fixed Fee of Article V - Allowable Cost and Fixed Fee:

(e) The fixed fee applicable to the work performed during the period October 1, 1963 to September 30, 1964 is \$141,276.

4. The following new subparagraph (e) is added to Paragraph 2., Payment of Fixed Fee, of Article VI - Payments:

(e) For the period October 1, 1963 through September 30, 1964, ninety per cent (90%) of the fixed fee of \$141,276 shall become due and payable in monthly installments of \$10,595.

cc: J. J. Wise, Asst. Mgr. for Admin.
N. J. Donahue, T&P Division
E. W. Stark, Accounting Branch
R. A. Messick, Contract Fin. Branch

~~SECRET~~

USDOE 017835

A

9

This document consists of 8 pages
 No. 1 of 10 copies, Series A.

WSRC DECLASSIFICATION REVIEW	
1st Review Date: 4/13/07	Determination (Circle Number)
Authority: <input checked="" type="checkbox"/> ADC <input type="checkbox"/> ADD	1. Classification Unchanged
Name: R. Wolf	2. Classification Changed To:
2nd Review Date: 5/23/09	3. Classification Cancelled
Authority: ADD	4. Other: R. Wolf 2/29/50
Name: R. Wolf	

SR-A-144

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED FEBRUARY 1, 1964, UNDER
 MODIFICATION NO. 36

The scope of work to be performed by the Contractor during the period October 1, 1963 through September 30, 1964, as set forth by Modification No. 35 is revised to read as follows:

I. PRODUCTION

A. MARK V-B AND MARK V-E (Inner-Fuel)

The Contractor shall manufacture and furnish to the Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark V-B (Tons) <u>Integral Rib</u>	Mark V-E (Tons) <u>Integral Rib</u>
October 1963	45	48
November 1963	47	20
December 1963	44	26
January 1964	41	28
February 1964	29	33
March 1964	19	33
April 1964	26	31
May 1964	24	27
June 1964	26	31
July 1964	12	11
August 1964	25	25
September 1964	25	25

B. THORIUM

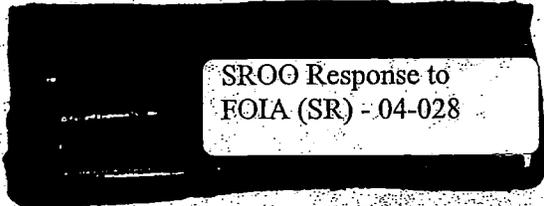
- Complete the canning and delivery of 11,500 Mark VII-T slugs for irradiation at the Savannah River Plant.
- Recover and re clad by December 23, 1963, approximately 500 Mark VII-T slugs to standard quality and dimensional specification except that the slug length is to be 6.400 ± 0.070 inch.

II. PROGRAM DEVELOPMENT

A. ELEMENT DEVELOPMENT

1. Long Slugs

Develop a process for canning Mark V-B and Mark V-E IF and OF Elements up to 16" in length by the hot pressure bonding process. Both impact extrusions and tubing will be investigated for cladding.



GROUP 1
 EXCLUDED FROM AUTOMATIC
 DOWNGRADING AND
 DECLASSIFICATION

Copy 9A + 10A destrs
 7/27/68

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED FEBRUARY 1, 1964, UNDER
MODIFICATION NO. 36

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

2. Added Rib

Continue development of the canning of Mark V-B IF elements with added ribs. Investigate the use of other types of aluminum for the rib and changes in the physical structure of the rib.

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

3. Tube Cladding

Study the effects of the use of tubing as cladding for Mark V-B and V-E IF hot pressure bonded slugs.

4. Recovery of Mark V-E

Develop a recovery program to reclaim reject Mark V-E IF slugs and reuse the cores. Set up standards, specifications and operating procedures, whereby reject slugs may be declad and reprocessed through the HPB process.

B. TOOLING AND CLADDING MATERIALS

1. Furnace Tooling

Investigate potential improvements in quality and economy attainable through the replacement of Inconel X by such metals as AF71 or Inconel for furnace tooling, such as mandrels, dies and vacuum pots. Make items of promising materials and test them in the HPB process.

2. Cladding

Investigate potential advantages of low alloys of aluminum as cladding material. Test the most promising materials, such as aluminum with additives of beryllium or germanium, in the HPB process, for further evaluation at SRP.

C. INDUCTION HEATING

1. Heat Pattern Control

Run a series of experiments on HPB induction furnaces to determine actual heat patterns and provide a consistent improved control of the heat applied to the slug.

Investigate the possible use of scanning equipment which will designate the temperature of the die as it leaves the furnace, thereby offering additional improvement of heat pattern control.

2. Cores with Anodic Etch

Investigate possible improvement of HPB strengths by the use of anodic etching of cores before plating and the rapid heat-up cycle attainable with induction furnaces.

D. NONDESTRUCTIVE TESTING

1. Eutectic Prevention

Investigate new methods for the detection of Mark V-B and V-E slugs that have been overheated during the pressing cycle, such as the use of magnetic and hysteresis effects and the chemical test which showed promise with Mark VII-A slugs.

2. Nickel Plate Control

Continue investigation of new types of nickel detection and measurement, such as the magnetic probe, to provide a closer control of the nickel plate on cores.

3. Uranium Metal Quality

Refine and test ultrasonic equipment for potential use in the detection of metal quality rejects before plating.

4. Aluminum Metal Quality

Investigate methods of improving the detection of metal quality rejects in aluminum cladding components before they are used.

[REDACTED]

APPENDIX "B" TO MODIFICATION NO.
CONTRACT NO. AT(30-1)-1293
REVISED FEBRUARY 1, 1964, UNDER
MODIFICATION NO. 36

III. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

U. S. ATOMICS ENERGY COMMISSION
Savannah River Operations Office

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions of the
Contract.

EFFECTIVE DATE : October 1, 1963

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 34</u>	<u>Increase (Decrease)</u>	<u>Modification No. 35</u>
<u>Summary of Estimated Costs and Fixed Fee</u>			
<u>Operating Cost</u> ^{1/}	\$26,523,671	\$2,143,870	\$28,667,541
<u>Plant and Equipment (Beginning July 1, 1963)</u>	123,932	249,100 ^{2/}	373,032 ^{2/}
<u>Fixed Fee (Operations)</u>	<u>1,488,615</u>	<u>141,276</u>	<u>1,629,891</u>
<u>Total Estimated Costs and Fixed Fee</u>	<u>\$28,136,218</u>	<u>\$2,534,246</u>	<u>\$30,670,464</u>
<u>Commission Obligation (as of November 1, 1963)</u>			<u>\$29,326,218</u>

^{1/} Includes Plant and Equipment prior to July 1, 1963.

^{2/} Includes \$35,000 for first quarter FY 1965 authorizations not to be obligated in FY 1964.

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USDOE 017290

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 28th day of February, 1964, effective October 1, 1963, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In Paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, the date "September 30, 1963," is deleted and the date "September 30, 1964," is substituted therefor.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,040,573, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,629,891. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1963, to September 30, 1964, is \$2,470,670, exclusive of the Contractor's fixed fee of \$141,276."
3. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$28,145,046" is deleted and the figure "\$29,326,218" is substituted therefor.

CONFORMED COPY

USDOE 017291

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. The following new subparagraph (e) is added to paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE:

"(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$141,276."
5. The following new subparagraph (e) is added to paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$141,276 shall become due and payable in monthly installments of \$10,595."
6. Item (c) Consulting Services of paragraph 4., Items of Allowable Cost, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(c) Consulting Services (including legal and accounting) and related expenses, as approved by the Contracting Officer, except as made unallowable by Item (y) of paragraph 5."
7. The following new subparagraph (y) is added to paragraph 5., Items of Unallowable Cost, of Article V - ALLOWABLE COST AND FIXED FEE:

"(y) Salaries or other compensation (and expenses related thereto) of any individual employed under this Contract as a consultant or in another comparable employment capacity who is an employee of another organization and concurrently performing work on a full-time basis for that organization under a cost-type contract with the Commission, except to the extent that cash payment therefor is required pursuant to the provisions of this Contract or procedures of the Commission applicable to the borrowing of such an individual from another cost-type contractor."
8. Appendix "A" Modification No. 29, as amended, is further amended as of October 1, 1963, and is attached hereto and made a part hereof.
9. Appendix "B" Modification No. 29, as amended, is further amended as of October 1, 1963, and is attached hereto and made a part hereof.
10. Provision 7., CONTRACTOR'S ORGANIZATION, of Appendix "E" General Provisions is revised to read as follows:

"7. CONTRACTOR'S ORGANIZATION

(a) Organization Chart. As promptly as possible after the execution of this Contract, the Contractor shall furnish to the Contracting Officer a chart showing the names, duties, and organization of

key personnel to be employed in connection with the work, and shall furnish from time to time supplementary information reflecting changes therein.

- (b) Supervising Representative of Contractor. Unless otherwise directed by the Contracting Officer, a competent full-time resident supervising representative of the Contractor, satisfactory to the Contracting Officer, shall be in charge of the work at the site at all times.
- (c) Control of Employees. The Contractor shall be responsible for maintaining satisfactory standards of employee competency, conduct and integrity and shall be responsible for taking such disciplinary action with respect to his employees as may be necessary. The Contractor shall establish such standards and procedures as are necessary to implement effectively the provisions set forth in Atomic Energy Commission Procurement Regulations 9-12.54 and such standards and procedures shall be subject to the approval of the Contracting Officer."

11. The following new General Provision No. 23 is added to Appendix "E" General Provisions of the Contract:

"23. Consultant or Other Comparable Employment Services of Contractor Employees

The Contractor shall require all employees who are employed full-time (an individual who performs work under the cost-type contract on a full-time basis) or part-time (50 percent or more of regular annual compensation received under terms of a contract with the Commission) on the Contract work to disclose to the Contractor all consultant or other comparable employment services which the employees propose to undertake for others. The Contractor shall transmit to the Contracting Officer all information obtained from such disclosures. The Contractor will require any employee who will be employed full-time on the Contract work to agree, as a condition of his participation in such work, that he will not perform consultant or other comparable employment services for another Commission cost-type Contractor under its Contract with the Commission except with the prior approval of the Contractor."

12. All other terms and conditions of the Contract remain unchanged.

Modification No. 35
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, SROO

WITNESSES:

/s/ M. Boll

Hicksville, New York
(Address)

/s/ J. Case

Hicksville, N. Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ D. B. Metz

TITLE: Manufacturing Manager
Sylcor Division

I, J. M. Toohar, certify that I am Asst. Secretary of Sylvania Electric Products Inc., named above; that D. B. Metz who signed this Agreement on behalf of said corporation, was then Mfg. Mgr., Sylcor Division of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 17th day of February 1964.

/s/ J. M. Toohar

(CORPORATE SEAL)

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Revised October 1, 1963

USDOE 017295

SYLVANIA ELECTRIC PRODUCTS INC.
SYLCOR DIVISION

Contract No. AT(30-1)-1293

APPENDIX "A"
Revised October 1, 1963

PERSONNEL PRACTICES

I. GENERAL PROVISIONS

This Appendix "A" sets forth the current personnel policies, wage and salary practices, employee benefit programs, travel, transportation, subsistence and moving expenses, and miscellaneous expenses and allowances approved as allowable costs under Contract No. AT(30-1)-1293.

The provisions included hereunder reflect regularly established policies and practices of the Contractor, modified only to meet the particular requirements of the Contract and approved by the Commission, and shall be administered in accordance with the Contractor's regular procedures. Reimbursement for items of cost pertaining to the personnel practices and procedures not specifically covered below shall be in accordance with this Contractor's published policies and procedures or consistent with the Contractor's established commercial practices and approved by the Contracting Officer.

This Appendix "A" may be modified from time to time, in whole or in part, without formal Contract modification by mutual written agreement between the Commission and the Contractor.

II. ABSENCES

A. Holidays

The Contractor recognizes nine (9) paid holidays in each calendar year.

Holidays falling on Sunday will be observed the following Monday.
Holidays falling on Saturday will be observed the preceding Friday.

B. Vacations

Employees of the Contractor who have, or will have, on July 1 of the current year the following records of continuous service, may receive paid vacations in accordance with the following schedule:

Revised October 1, 1963

<u>Length of Service</u>	<u>Hourly Employee</u>	<u>Salary Employee</u>
6 months but less than 1 year	20 hours	1 week
1 year but less than 3 years	40 hours	2 weeks
3 years but less than 10 years	80 hours	2 weeks
10 years but less than 25 years	120 hours	3 weeks
25 years or more	160 hours	4 weeks

A week's pay in lieu of one week's vacation may be granted to employees who are eligible for three or four weeks' vacation.

Additional prorated vacation payments may be made to employees eligible for vacation pay based on the following lengths of service:

Hourly Employees

More than 26 weeks but less than 52 weeks	1/26 of 20 hours for each week above 26
More than 2 years 12 weeks but less than 3 years	1 hour for each week above 2 years 12 weeks

Salaried Employees

More than 26 weeks but less than 52 weeks	1/26 of 1 week's pay for each week above 26
---	---

The above vacation allowances are non-cumulative and shall be taken prior to December 31 of the current vacation year or forfeited.

Shift premium if applicable, may be included in vacation payments. If the majority of the employees have actually worked on a schedule averaging 48 hours or more per week for the first six months of a calendar year, vacation payments may be based on a 48-hour per week straight time basis.

An extra day's vacation is allowed for each paid holiday falling within the vacation period. Payment for such holiday may be granted to hourly or non-exempt salaried employees.

Employees who leave the Company prior to July 1 of the current year may receive a vacation accrual equal to the number of weeks on the payroll since last July 1, divided by 52, multiplied by the normal vacation pay for an employee with their record of continuous service. Employees who leave the Company after July 1 who have not received the vacation pay to which they are eligible as of July 1, will receive such payments at the time of separation.

Revised October 1, 1963

C. Sick Leave

1. Salaried Employees

Leave with pay may be granted to employees who are absent from work because of personal illness or injury. The amount of such leave granted shall be in accordance with established practices consistently applied throughout the Contractor's organization based upon the following schedule:

<u>Employee's Service</u>	<u>Cumulative Time Off in Any 12-Month Period</u>
Less than 6 months	1 week
6 months to 1 year	2 weeks
1 year to 2 years	4 weeks
2 years to 25 years	4 weeks plus 2 weeks for each full year of continuous service beyond 2 years up to maximum of 50 weeks
More than 25 years	50 weeks

No reimbursement shall be made for unused sick leave to employees upon termination of employment.

2. Hourly Employees

Excused leave with pay may be granted full-time employees who are absent from work for reasons of personal illness, injury, or disability based upon the following provisions:

Full-time employees with one or more years of continuous service who are on the payroll as of January 1 of any calendar year shall be credited with 40 hours of sick leave allowance for that calendar year.

Full-time employees who are not on the payroll as of January 1 but who returned to work from layoff or leave of absence subsequent to January 1 shall be credited for the balance of the calendar year with an amount of sick leave allowance equal to the number of full calendar months remaining in the calendar year times 3-1/3 hours.

Full-time employees who complete their first year of continuous service subsequent to January 1 shall be credited for the balance of the calendar year with an amount of sick leave allowance

Revised October 1, 1963

equal to the number of full calendar months remaining in the calendar year times 3-1/3 hours.

Full-time employees who complete their first year of continuous services on or before the 15th day of the month will be credited with a full 3-1/3 hours of sick leave allowance for that month. Allowances for regular, part-time employees will be reduced proportionately, provided they are employed to work a minimum weekly work schedule of 20 hours or more.

Unused sick leave will be accumulated from year to year up to a maximum of 480 hours. In no case will unused sick leave pay be reimbursed to employees, including separation from the company, for any reason.

Sick leave pay shall be computed at the employee's straight-time hourly rate in effect on the first full or partial day of absence. Shift premium may be added to such straight-time sick leave for employees who, if they worked, would have been assigned to a premium shift.

Employees receiving sick leave pay will not be entitled to Non-Occupational Insurance Benefits for the same period of absence. The number of weeks of Non-Occupational Disability Insurance Benefits to which an employee is entitled shall be reduced by the equivalent number of consecutive 40-hour increments (or fractional portion thereof) of sick leave pay received. Non-Occupational Disability Insurance Benefits will commence at the termination of sick pay if the employee is still unable to return to work due to personal illness or injury and has been disabled for more than seven (7) consecutive calendar days.

Payments received under Workmen's Compensation, cost reimbursed in whole or in part by the Commission, shall be deducted from the sick leave pay received by an employee during any period such payments are received. Sick leave pay will be the difference between the weekly Workmen's Compensation payment and the employee's weekly straight-time wage in effect at the time an occupational disability occurs. When such partial sick leave payments are made, the number of hours to be charged against an employee's sick leave allowance will be determined by dividing the employee's straight-time earnings into the appropriate amount of weekly sick leave pay to be granted.

Revised October 1, 1963

D. Other Absences

1. Court Duty

Employees may be allowed time off without loss of straight-time pay for required jury duty or for required appearance at a court trial.

- a. Hourly and Non-Exempt Salaried Employees will receive the difference between fees received from the court and their normal pay for an eight-hour day.
- b. Exempt Salaried Employees will be paid their normal salary in addition to court fees.

2. Marriage

When an employee elects to be married, he may be granted time off as follows:

- a. Hourly Employees: Up to one week off without pay.
- b. Salaried Employees: Less than 6 months service: Up to one week off without pay. Six months service or more: Up to one week with pay.

3. Death in the Immediate Family

Any employee may be granted up to three working days off with pay because of the death of the employee's spouse, father, mother, son, daughter, brother or sister, mother-in-law or father-in-law.

4. Required Military Duty

Time off for required military reserve duty, not to exceed two weeks during any twelve-month period may be granted to:

Hourly Employees - without pay

Salaried Employees

- (a) Less than six (6) months service - without pay
- (b) With more than (6) months service, the difference, if any between their salary base rate and their military pay for the period.

All employees with six (6) months or more of continuous service

Revised October 1, 1963

who are ordered to active duty for periods of not less than six (6) months duration may receive the equivalent of one (1) month's pay upon release from employment to perform such duty unless he enlists while on an approved occupational deferment.

5. Required Selective Service Examination

Time off with pay may be granted to employees required to visit military examination centers for the purpose of taking preliminary or final type examinations. The amount paid to non-exempt employees shall not exceed eight (8) hours of straight-time pay, including shift premium, if any.

6. Personal Reasons

Time off may be granted to employees absent for personal reasons. Time off for personal reasons may be granted to hourly employees only on a non-pay basis. Non-exempt Plan B employees with six or more months of continuous service may be paid for time off not to exceed five days per year. Exempt Plan A employees with six or more months of continuous service may be paid for time off at the discretion of the Manufacturing Manager or, in his absence, the person acting in his behalf. When such time off exceeds two weeks, additional time off shall come under provisions of II. D.7., below.

7. Leave of Absence

A leave of absence without pay may be granted to employees who are absent for two or more weeks but not to exceed 18 months. Seniority or other benefits shall not be accrued during leaves of absences granted under this section.

III. WAGE AND SALARY ADMINISTRATION

A. Executive Compensation

Executive compensation including bonuses and other remunerations will, for cost-reimbursement purposes, not exceed a pro rata share of the equivalent of \$30,000 per annum for any one executive. The determination of allowable related costs based on compensations paid will also be determined on the basis of the foregoing limitation. In addition, prior Commission approval shall be obtained on the establishment or adjustment of single rates or rate ranges which exceed \$25,000 per year and on any individual salary action which involves a total compensation of \$25,000 or more per year.

Revised October 1, 1963

B. Salary Schedules

Employees whose wages or salaries are cost-reimbursed under the Contract shall be employed in the job classification, grade and salary ranges approved under Schedules I and II attached hereto. Current organization charts, job descriptions and appropriate wage and salary data will be filed with the Commission in support of approved job classifications, grades and wage and salary ranges. Cost of living and general wage and salary adjustments require the prior approval of the Commission.

C. Increases and Promotions

1. Salaried Employees

It is the policy of the Contractor to base the employee's salary on his production and accomplishments in terms of the requirements of his job classification and the rate range for the classification. Reclassification, promotions and merit raises may be made at the discretion of the Contractor in accordance with established practices and procedures. Salaried employees may be considered for merit increases in accordance with the following schedule.

<u>Employee's Place in Rate Range</u>	<u>Interval Between Merit Increases</u> <u>Salaried Employees</u>	
	<u>Non-Exempt</u>	<u>Exempt</u>
Below mid-point of salary range	6 months	12 months
Above mid-point, not immediately promotable	12-18 months	18-24 months
Above mid-point, immediately promotable	6 months	12 months

A non-exempt salaried employee's job performance shall be reviewed semi-annually and he may receive an increase of up to 5% of his base rate at each semi-annual review. Merit increases for exempt salaried employees shall not be granted less than one year from the preceding merit or promotional increase except in unusual cases, and in no case shall they exceed 10% per year. Exceptions may be granted only with the prior approval of the Commission. No merit increase shall be given in excess of the established maximum rate for the position of the exempt or non-exempt salaried employee.

Revised October 1, 1963

2. Hourly Employees

Merit raises within the appropriate labor grade may be given once every three calendar months. In unusual circumstances a merit raise may be given after two calendar months have elapsed after a previous merit increase. New hires may receive a merit increase at the conclusion of a 45-day probationary period. New hires with trainee classification may be promoted to their regular classification and brought to their first step of the appropriate labor grade at the conclusion of a 45-day probationary period.

D. Leadman Premium (Hourly Employees)

An employee officially designated as a "Leadman" may be paid a 10% premium in addition to his hourly rate.

E. Shift Differential

Premium pay of 10% of straight time and overtime earnings will be paid for work on shifts commencing outside the hours of 7:00 a.m. to 9:00 a.m.

F. Compensation for Premium Time - Overtime and Holiday Work

As deemed essential to the performance of Contract work, the Contractor may authorize occasional overtime. Work weeks in excess of 40 hours scheduled for more than four consecutive weeks shall require prior approval of the Commission. Payments for overtime work shall be in accordance with the Federal Wage and Hour Law and the Contractor's established pay practices.

Regular employees may receive their regular straight time pay, not to exceed eight hours (including shift premium if applicable) for unworked official holidays.

If a non-exempt salaried or hourly employee is required to work on an official holiday, he will be compensated for the hours worked at one and one-half times his normal rate of pay including shift differential in addition to the basic eight hours holiday pay.

G. Report-in Pay

An employee who reports to work for his scheduled hours will receive full pay from such hours (not to exceed 8) for that day even though idle or sent home early because of delay or shortage or other reasons beyond his control, except that no such pay shall be made in cases where the Company's failure to provide work is due to power failure, fire, flood, weather conditions, or other conditions beyond the Company's control.

Revised October 1, 1963

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

March 10, 1964

Randall G. Erdley, Chief
Savannah River Patent Group

SYLVANIA ELECTRIC PRODUCTS, INC. - CONTRACT AT(30-1)-1293

CP:AFW:cm

The subject contract has been extended from September 30, 1963
to September 30, 1964, with an increase in obligation of funds
from \$28,145,046 to \$29,326,218.

OFFICE ▶	Patent Br.					
SURNAME ▶	W. R. P.					
DATE ▶	3-10-64					

Form AEC-318 (Rev. 9-53)

U. S. GOVERNMENT PRINTING OFFICE 16-62701-3

USDOE 017215

UNITED STATES GOVERNMENT

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Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *James R. James*
A. Y. Morgan, Director
Budget & Finance Division

SUBJECT: SYLCOR PROPOSAL P-64-4

FB:MER:ss

DATE: MAR 13 1964

Document No. SR-*FB-1025*

This document consists of 5 pages,

No. 1 of 8 copies, Series A

We have reviewed Sylcor's revised proposal for the period 10/1/63 to 9/30/64 (2472-H P-64-4 Revised) and submit the following cost analysis, conclusion and contract finance information.

Change in scope and estimates

	Current Auth.	Revised Est.	Change
	P-64-2	P-64-4	
<u>Production</u>			
Mark V-B tons	515	363	(152)
Mark V-E tons	146	328	182
Total Prod. tons	<u>661</u>	<u>691</u>	<u>30</u>

Includes Act.
Thru Jan. '64

Costs

Mark V-B	\$1,278,930	\$ 986,313	\$(292,617)
Mark V-E	786,445	1,381,269	594,824
Thorium	11,870	18,172	6,302
Development	228,661	120,509	(108,152)
Tooling	10,600	6,145	(4,455)
Fabricated Equipment	181,240	90,800	(90,440)
Purchased Equipment	114,200	87,900	(26,300)
Total Costs	<u>\$2,611,946</u>	<u>\$2,691,108</u>	<u>\$ 79,162</u>

Fee Base Adjusted

Direct Labor	\$ 722,999	\$ 754,200
Direct Materials	598,966	647,180
Overhead	861,724	878,670
G & A	172,781	173,850

Adjustments

(a) Zr. cladding (prior contract period)	(1,800)	(1,800)
(b) Tooling	-0-	(12,000)
(c) Equipment Fabr.	-0-	(8,300)
Total	<u>\$2,354,670</u>	<u>\$2,431,800</u>
Fee @ 6% (rounded)	<u>\$ 141,276</u>	<u>\$ 145,908</u>

DEPARTMENT OF ENERGY-SAVANNAH RIVER DECLASSIFICATION REVIEW

Determination (Circle Number)

1. Classification Unchanged

2. Classification changed to:

3. Classification Canceled

4. Other: C6-NFP-2 9.00

1st Review Date: 4/3/03

Authority: EA, DC, ADD

Name: O. B. Slack

2nd Review Date: 1/13/03

Authority: ADD

Name: James R. James

GROUP 1

EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

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J. S. Hopkins

-2-

MAR 13 1964

Fee Base Adjustment

In P-64-4 Sylcor's estimated fee base was as follows:

October 1962 - January 1964 (P-64-2)	\$1,042,030
February - September 1964 (P-64-4)	1,411,870
Less Carryover Development Prior to 10/1/63	(1,800)
Net	<u>\$2,452,100</u>
Fee @ 6%	<u>\$ 147,126</u>

From an analysis of the Sylcor proposal (P-64-4) it was determined that the fee base for the period included an amount of \$17,700 for Du Pont tooling whereas their revised estimated tooling cost for the year was \$5,755. Also, fabricated equipment reflected a significant decrease from the prior proposal. R. McFeely and M. E. Robinson discussed these discrepancies with A. Gannon of Sylcor who referred the question to Bill Crowley. Crowley agreed to adjust the fee base by \$12,000 in the tooling program and \$8,300 in the fabricated equipment (estimated underrun in January 1964). With these adjustments in fee base, the revised estimate is as follows:

Fee base as requested	\$2,452,100
Less tooling	(12,000)
Less fabricated equipment	(8,300)
Revised fee base	<u>\$2,431,800</u>
Fee @ 6%	<u>\$ 145,908</u>

Also, since approval of P-64-2, SROO has received revised FY 1965 budget estimates in which no allowance for development was made for Sylcor. Therefore, as a result of discussions between Jack Donahue and Sylcor personnel, the development amounts as included in P-64-4 for the period July-September 1964 were reallocated to Mark V-B and Mark V-E canning.

<u>Unit Costs</u>	<u>P-64-2</u>	<u>P-64-4</u>
Costs V-B	\$1,279,000	\$ 986,000
Production Lbs.	1,030,000	743,000
Unit Cost	\$1.24	\$1.33
Cost V-E	\$ 786,000	\$1,381,000
Production Lbs.	292,000	655,000
Unit Cost	\$2.69	\$2.11

Amounts in P-64-4 include actual production and cost through January 1964.

The unit cost in FY 1964 to date for Mark V-B has been \$1.39/lb.
The unit cost in FY 1964 to date for Mark V-E is \$3.11/lb.

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USDOE 017828

The estimated unit cost at the end of this contract period for Mark V-B is estimated at \$1.34/lb. at a rate of 25 tons per month. The estimated unit cost for Mark V-E is \$1.76/lb. at the end of the period at a rate of 25 tons per month.

Based on those production rates which are essentially one-half capacity for Sylcor, the estimates for canning are considered reasonable.

Direct Labor - Overhead Ratios

	Actual		Est. 10/1/63-9/30/64	
	Jan. 1964	July-Jan.	P-64-2	P-64-4
Direct Labor	\$ 76,000	\$533,000	\$ 723,000	\$ 732,000
Overhead	105,000	601,000	862,000	890,000
Ratio	138%	112%	119%	122%

Based on a declining direct labor base and on experience in January 1964, the total overhead and ratios are not considered unreasonable.

G & A

Total Cost Subject to G & A	\$2,184,000	\$2,286,000
G & A	173,000	172,000
Ratio	7.9%	7.5%

Personnel

<u>Man-Months</u>	<u>P-64-2</u>	<u>P-64-4</u>
Mark V-E	492	812
Mark V-B	819	591
Development	170	84
Thorium	10	22
Equipment Fabr.	117	76
Tooling	23	11
Expense	228	231
Total	<u>1,859</u>	<u>1,827</u>
Employment end of period	115	118

Revised Estimate by Program

	<u>Fee Base Cost</u>	<u>Fee</u>	<u>Total</u>
Mark V-E	\$1,265,560	\$ 82,669 ^{a/}	\$1,348,229
Mark V-B	935,215	56,113	991,328
Thorium	11,200	672	11,872
Development	103,620	6,217	109,837
Tooling	5,755	345	6,100
Equipment Fabr.	112,250	-0-	112,250
Adjustment (Dev.)	(1,800) ^{b/}	(108) ^{b/}	(1,908)
Total	<u>\$2,431,800</u>	<u>\$145,908</u>	<u>\$2,577,708</u>
Purchased Equipment	87,900	-0-	87,900
Total	<u>\$2,519,700</u>	<u>\$145,908</u>	<u>\$2,665,608</u>

^{a/} Includes \$6,735 fee on fabricated equipment.

^{b/} Cost and fee approved in contract period ending September 30, 1963.

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J. S. Hopkins

-4-

MAR 13 1964

Conclusion

Accept Sylcor's proposal P-64-4 as revised March 4, 1964.

Contract Finance Information

Recap of Revised Costs and Commission Obligation

Summary of Estimated Costs and Fixed Fees

	<u>Mod. 35</u>	<u>Inc. (Dec.)</u>	<u>Mod. 36</u>
Operating Cost	\$28,667,541	\$ 381,913	\$29,049,454
Plant & Capital Equip. - Beginning July 1, 1963	373,032	(156,743)	216,289 ^{a/}
Fixed Fee Operations	<u>1,629,891</u>	<u>4,632</u>	<u>1,634,523</u>
Total Estimated Cost and Fixed Fee	<u>\$30,670,464</u>	<u>\$ 229,802</u>	<u>\$30,900,266^{a/}</u>
Commission Obligation			\$30,870,266

a/ Includes \$30,000 for first quarter FY 1965 authorizations not to be obligated in FY 1964.

To be obligated upon execution of Modification 36 of contract.

Operating Costs	\$ 386,545
Equipment (deobligation)	(18,000)

Contract Articles

2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,265,743, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,634,523. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1963, to September 30, 1964, is \$2,545,200, exclusive of the Contractor's fixed fee of \$145,908."

3. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$29,326,218" is deleted and the figure "\$30,870,266" is substituted therefor.

4. The following new subparagraph (e) is added to paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE:

"(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$145,908."

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USDOE 017830

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J. S. Hopkins

-5-

MAR 13 1964

5. The following new subparagraph (e) is added to paragraph 2.,
Payment of Fixed Fee, of Article VI - PAYMENTS:

"(e) For the period October 1, 1963, through September 30,
1964, ninety per cent (90%) of the fixed fee of
\$145,908 shall become due and payable in monthly
installments as follows:

October 1963 - December 196 ³ 4	\$13,883
January 1964 - September 1964	\$ 9,963

cc: J. J. Wise, Asst. Manager for Admin.
N. J. Donahue, T&P Division
E. W. Stark, Accounting Branch
R. A. Messick, Contract Fin. Branch

~~SECRET~~

USDOE 017831

U. S. ATOMICS ENERGY COMMISSION
Savannah River Operations Office

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions of the
Contract.

EFFECTIVE DATE : February 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 35</u>	<u>Increase (Decrease)</u>	<u>Modification No. 36</u>
<u>Summary of Estimated Costs and Fixed Fee</u>			
Operating Cost	\$28,667,541	\$ 381,913	\$29,049,454
Plant and Capital Equip. (Beginning July 1, 1963)	373,032	(156,743)	216,289 a/
Fixed Fee (Operations)	<u>1,629,891</u>	<u>4,632</u>	<u>1,634,523</u>
Total Estimated Cost and Fixed Fee	<u>\$30,670,464</u>	<u>\$ 229,802</u>	<u>\$30,900,266 a/</u>
Commission Obligation			<u>\$30,870,266</u>

a/ Includes \$30,000 for first quarter FY 1965 authorizations not to be obligated
in FY 1964.

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USDOE 017322

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 20th day of April, 1964, effective February 1, 1964, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,265,743, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,634,523. The estimated cost of the work as described in paragraph 1. of the article entitled SCOPE OF WORK for the period October 1, 1963, to September 30, 1964, is \$2,545,200, exclusive of the Contractor's fixed fee of \$145,908."
2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$29,326,218" is deleted and the figure "\$30,870,266" is substituted therefor.
3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:
 - "(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$145,908."

USDOE 017323

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$145,908 shall become due and payable in monthly installments as follows:

October 1963 - December 1964	\$13,883
January 1964 - September 1964	9,963

5. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is further amended as of February 1, 1964, and is attached hereto and made a part hereof.

6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager. SROO

WITNESSES:

/s/ M. Boll

Hicksville, New York
(Address)

/s/ J. Steglis

Hicksville, New York
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ D. B. Metz

TITLE: Manufacturing Manager

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. Toohar, certify that I am Asst. Secretary
of Sylvania Electric Products Inc., named above; that D. B. Metz
who signed this Agreement on behalf of said corporation, was then Mfg. Manager,
Sylcor Division, of said corporation; and that this Agreement was
duly signed for and in behalf of said corporation by authority of its governing
body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 9th day of April
1964.

(CORPORATE SEAL)

/s/ J. M. Toohar

A

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office
FINDINGS AND DETERMINATION

AUTHORIZATION FOR MODIFICATION OF COST-PLUS-FIXED-FEE CONTRACT

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
Contract AT(30-1)-1293
Modification No. 36

The Atomic Energy Commission proposes to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc. to amend the scope of work to be performed by the Contractor during the period October 1, 1963, through September 30, 1964.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering an immediate unit-price arrangement.
2. Program requirements are subject to immediate change.
3. Continuous process development is required.
4. The revised estimated cost of the work under the contract, \$2,545,200 is considered reasonable.
5. The fixed fee adjustment is based on the previously applied rate of six percent of the estimated cost fee base and is considered to be fair and equitable.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee Supplemental Agreement, and I hereby authorize the use of said Supplemental Agreement.

BY: H. L. Kilburn

TITLE: Savannah River Operations Office

DATE: APR 2 1964

U. S. ATOMICS ENERGY COMMISSION
Savannah River Operations Office

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.,
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions of the
Contract.

EFFECTIVE DATE : February 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 35</u>	<u>Increase (Decrease)</u>	<u>Modification No. 36</u>
<u>Summary of Estimated Costs and Fixed Fee</u>			
<u>Operating Cost</u>	\$28,667,541	\$ 381,913	\$29,049,454
<u>Plant and Capital Equip. (Beginning July 1, 1963)</u>	373,032	(156,743)	216,289 a/
<u>Fixed Fee (Operations)</u>	<u>1,629,891</u>	<u>4,632</u>	<u>1,634,523</u>
<u>Total Estimated Cost and Fixed Fee</u>	<u>\$30,670,464</u>	<u>\$ 229,802</u>	<u>\$30,900,266 a/</u>
Commission Obligation			<u>\$30,870,266</u>

a/ Includes \$30,000 for first quarter FY 1965 authorizations not to be obligated
in Fy 1964.



U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 20th day of April, 1964, effective February 1, 1964, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,265,743, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,634,523. The estimated cost of the work as described in paragraph 1. of the article entitled SCOPE OF WORK for the period October 1, 1963, to September 30, 1964, is \$2,545,200, exclusive of the Contractor's fixed fee of \$145,908."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$29,326,218" is deleted and the figure "\$30,870,266" is substituted therefor.
3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$145,908."

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety per cent (90%) of the fixed fee of \$145,908 shall become due and payable in monthly installments as follows:

October 1963 - December 1964 ³⁰⁰⁰⁰ \$13,883
January 1964 - September 1964 ¹¹⁹ 9,963

5. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, as amended, is further amended as of February 1, 1964, and is attached hereto and made a part hereof.

6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: [Signature]
R. C. Baly, Manager
TITLE: Savannah River Operations Office

WITNESSES:

[Signature]

Richmond, N.Y.
(Address)

[Signature]

Richmond, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: [Signature]

TITLE: Manufacturing Manager
Sylcor Div.

Modification No. 36
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. TOOPER, certify that I am ASST. SECRETARY
of Sylvania Electric Products Inc., named above; that D. B. METZ
who signed this Agreement on behalf of said corporation, was then MFG MGR
Sylvania Div. of said corporation, and that this Agreement was
duly signed for and in behalf of said corporation by authority of its governing
body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this 9th day of APRIL
1964.

(CORPORATE SEAL)

J. M. Tooper

SYLVANIA ELECTRIC PRODUCTS INC.

SYLOR DIVISION

HICKSVILLE, NEW YORK

APRIL 20, 1964

PROPOSAL TO AEC SROO

Use of Government Owned Facilities
In Performance of Private Commercial Work

- I. For purposes of this agreement all private commercial work will be referred to as "outside work" and will be considered work for the Sylcor Commercial Plant at Hicksville. All outside work to be performed will be requested on the Sylcor Work Order Form to be approved by the AEC SROO prior to start of work (or in accordance with agreements to be made with AEC).
- II. The work under Contract AT(30-1)-1293 shall at all times, and without any qualification or limitation whatsoever, have the absolute priority in time, effort, and in all other significant respects over any outside work. This agreement excludes all cost type work performed under an Appendix "C" agreement sponsored by the AEC as provided for in the contract under paragraph 2 of article 1.
- III. The work to be performed under this agreement will exclude the AEC Production, Inspection and Process Control Departments including the area occupied, equipment and personnel of these departments. These departments will hereinafter be referred to as AEC Operations Departments.
- IV. The work to be performed under this agreement will include the Area Occupied, Equipment and Personnel of the following departments hereinafter referred to as Production Support Departments:

<u>Dept. #</u>	<u>Name</u>
21	Chemical Services
23	Engineering Dept.
24	Machining Services
27	Plant Engineering (Drafting & Maint.)
29	Metallography Services

- V. The AEC Plant (Contract 1293) expenses will be credited monthly on a full cost reimbursement basis for all outside work performed by the Production Support Departments for the sum total of the following expenses:

1. Direct Labor

Based on actual time card charges to job numbers assigned to outside work.

contin

SYLVANIA ELECTRIC PRODUCTS INC.

SYLCOB DIVISION

HICKSVILLE, NEW YORK

Page 2

PROPOSAL TO AEC SROC

V. (continued)

2. Overhead

An overhead rate to be applied to direct labor which represents total AEC Plant overhead including all service department prorates and security department expenses.

A provisional rate will be established for interim use on outside work. This provisional rate will be adjusted to actual on a semi-annual basis.

3. Depreciation of AEC Owned Equipment

An overhead rate to be applied to direct labor which represents the depreciation of the equipment included in the production support departments. The amount charged will be calculated using the depreciation rates recorded on AEC records and will include an amount to represent depreciation on fully depreciated items.

A provisional rate will be established for interim use on outside work. This provisional rate will be adjusted to actual on a semi-annual basis.

The depreciation overhead rate will be arrived at by dividing the total direct labor of the Production Support Departments into the total depreciation dollars of the equipment in these departments plus an allocation of the Administration Department equipment depreciation. Due to the specialized nature of the plating equipment a separate rate will be established for outside plating work in the event such work becomes available.

4. Stores Materials

Any common use materials withdrawn from the stockroom for use on outside work will be charged to the job on the basis of a properly approved Stores Requisition charging the appropriate outside work order.

5. Charge For AEC Administration

A factor to be agreed upon by the parties will be applied to the sum of items 1 through 4 above. This amount will be credited to the AEC contract and will represent a charge for AEC administration of the procedures of this agreement.

continued -

SYLVANIA ELECTRIC PRODUCTS INC.

SYLCOF DIVISION

HICKSVILLE, NEW YORK

Page 3

PROPOSAL NO. NEW 0270

- VI. The Work Order form will show the job number, customer, estimated cost in detail and a complete description of the work to be done and the facilities to be used. The period of performance will also be indicated on the work order. Work will not be contracted for in excess of a six (6) month period.
- VII. An up-to-date listing of all equipment included in the Production Support Departments will be maintained showing tag number, date acquired, first cost, annual and monthly depreciation amounts. This listing will substantiate the monthly depreciation amounts to be used in developing the Depreciation Schedule Rate described in Article V Paragraph 3.

SYLVANIA

Contracts - 7-3

Twx No. Hkvl 2358

407.6

SYLVANIA ELECTRIC PRODUCTS INC.

Subsidiary of GENERAL TELEPHONE & ELECTRONICS CORPORATION



Sylcor Division

Cantiague Road
Hicksville, N. Y.

May 1, 1964

Dr. Glenn T. Seaborg, Chairman
U.S. Atomic Energy Commission
Washington, D.C.

Dear Dr. Seaborg:

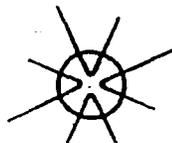
Your letter of April 25 was appreciated. Immediately upon receipt of it, I called a meeting of management of our Sylcor Division, which is responsible for contract AT(30-1)-1293, at which we reviewed and discussed your recommendations and suggestions for cost reduction in keeping with President Johnson's program.

Let me say at the outset that Sylcor will, aggressively and enthusiastically, follow these recommendations. In addition, we shall continue to follow those plans of our own which were drafted in the past with the sole intent of realizing substantial cost reduction for the AEC in 1964 and subsequent years. In this regard, may I indulge your patience and cite a few specifics.

We believe our program in the cladding of fuel elements for Savannah River will result in savings of approximately \$1.5 million to the AEC in calendar year 1964. We break this down as follows:

1. Our new re-cladding process that will eliminate the remelting of uranium used in the V-B and V-E programs

NUCLEAR FUEL ELEMENTS



DOE Hist Div
AECSECY Files 58-6
Job 0020, Box 1332
F: Contracts - 1-7010
CUSTOM METALLURGY (C)

USDOE 000255

at Savannah River. We estimate 1964 savings to the AEC under this development to be about \$1,118,000.

2. Our mechanization of the cladding operation which reduces the manpower on our main product line by more than 50%. We estimate 1964 savings to the AEC under this development at \$480,000.

The two programs cited above are typical of the many other cost reduction programs we have instituted in the past which, we believe, have gained us an enviable reputation with the AEC. On the attached separate sheet I have outlined some of our previous achievements in the areas of cost reduction and quality improvement.

As you know, however, off-site development funds have been cancelled as of June 30, 1964.

In addition, our program has been reduced by 30% due to the reduction of the weapons program at Savannah River. We believe, however, that because of the mechanized process cited above, we can carry out these lower levels of production on an extremely economical basis.

Our present contract expires on September 30, 1964. It is our impression -- gained during numerous discussions with AEC personnel -- there is a strong probability that our contract will be allowed to expire as of September 30, and all canning work consolidated at Savannah River.

It should be stated here that cladding costs consistently have been less expensive at Sylcor. While it might appear that out-of-pocket costs may be saved in fiscal 1965 by consolidation of this work at Savannah River, we at Sylcor believe sincerely that, in the long run, it will be substantially less costly for the AEC to continue the competitive procedures and spirit that has existed between the two sites.

In the interests of the AEC, we believe that the data presented on cost savings for fiscal years 1965 and 1966,

Dr. Seaborg

-3-

5/1/64

now in the possession of the Commission, should be reviewed on the basis of long-term effectiveness and cost saving, rather than on what appears to be a less valid basis of out-of-pocket savings for fiscal 1965.

My associates and I should be happy to meet at any time with any members of the AEC you might designate to provide further information, or for amplification and confirmation of the data already submitted.

Sincerely yours,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC



G. L. Moran
Vice President & General Manager

GLM/gg
Att:

USDOE 000258

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

May 7, 1964

Randall G. Erdley, Chief
Savannah River Patent Group

MODIFICATION NO. 36 - SUPPLEMENTAL AGREEMENT TO CONTRACT
AT(30-1)-1293 WITH SYLVANIA ELECTRIC PRODUCTS, INC.

CP:AFW:cm

The subject modification authorizes an increase in obligation
of funds from (\$29,326,218 to \$30,870,266) with \$145,908 designated
as fixed fee applicable to work performed during the period
October 1, 1963 to September 30, 1964.

OFFICE ▶	Patent Br.					
SURNAME ▶	RRG					
DATE ▶	5-7-64					

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division
(Signature)

FROM : A. Y. Morgan, Director
Budget and Finance Division

DATE: JUN 20 1964

SUBJECT: REVIEW OF SYLCOR PROPOSAL P-64-6

Document No. SR-FD-1064

FB:MER:ac

This document consists of 5 pages.

No. 1 of 2 copies. Series A

We have reviewed Sylcor's proposal (P-64-6 of June 11, 1964, revised by teletype of June 22, 1964).

The following scope changes, cost analysis, conclusion, and contract finance information are submitted for your consideration in preparing a modification to the contract.

Scope changes from P-64-4 as authorized in teletype from Blair to Metz on March 13, 1964 are as follows. The Mark V-E scope change was authorized on the March 13, 1964 teletype.

A) Scope Changes

- (1) Increase in Mark V-E tonnage by 14 tons
- (2) Machining and canning of 7,000 thorium slugs
- (3) Production of 190 sets of Mark V-B extended length slugs
- (4) Deletion of Process Development after May 31, 1964

B) Cost Changes

To accomplish the above net change in scope, Sylcor estimates a net increase in cost subject to fee of \$62,810 with an increase in fee of \$3,769. We believe this increase to be reasonable and justified.

Analysis of Change in Fee Base P-64-6

	P-64-6 Proposed		P-64-4 Current		Change	
	Cost	Fee	Cost	Fee	Cost	Fee
Mark V-E	\$1,252,860	\$ 75,172	\$1,265,560	\$ 75,934	\$(12,700)	\$ (762)
Mark V-B (Reg.)	920,450	55,227	935,215	56,113	(14,765)	(886)
Mark V-B (Long)	64,030	3,842	-	-	64,030	3,842
Dev.	90,850	5,451	103,620	6,217	(12,770)	(766)
Tooling	650	39	5,755	345	(5,105)	(306)
Thorium	53,250	3,195	11,200	672	42,050	2,523
Equip.	114,320	6,859	112,250	6,735	2,070	124
Adj. Zirc. (Prior)	(1,800)	(108)	(1,800)	(108)	-	-
Total	\$2,494,610	\$149,677	\$2,431,800	\$145,908	\$ 62,810	\$3,769

DEPARTMENT OF ENERGY - GAYANNAH RIVER DECLASSIFICATION REVIEW
 Determination (Circle Number)
 1. Classification Unchanged
 2. Classification changed to:
 3. Classification Canceled
 4. Other: CG/N/P-2 940

1st Review Date 4/3/63
 Authority: E.A.C. UADD
 Name: J.G. Black
 2nd Review Date 4/13/63
 Authority: ADD
 Name: Jennett N. Anderson



GROUP 1
 EXCLUDED FROM AUTOMATIC
 DOWNGRADING AND
 DECLASSIFICATION
 Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

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J. S. Hopkins

- 2 -

JUN 20 1964

	10/1/63 1/31/64 P-64-2	2/1/64 5/31/64 P-64-4	6/1/64 9/30/64 P-64-6	Total
Fee Base				
Direct Labor	\$ 333,930	\$237,530	\$197,500	\$ 769,010
Direct Mat.	283,380	211,200	181,800	676,380
Overhead	355,240	294,370	248,230	897,840
G & A	69,430	56,830	49,970	176,230
Total	<u>\$1,042,030</u>	<u>\$799,930</u>	<u>\$677,500</u>	<u>\$2,519,460</u>
Adjustments				
Tooling (P-64-4)) (12,000)
Tooling (P-64-6)				(2,750)
Fab. Equip. (P-64-4)				(8,300)
Dev. Prior (P-64-2)				(1,300)
Net Fee Base				<u>\$2,494,610</u>
Fee @ 6%) 149,877

In their proposal P-64-6 Sylcor had included in their fee base some \$3,380 for Du Pont Tooling. In discussions with Sylcor it was agreed that the tooling program was to be discontinued after only a small amount of work and the tooling amount in the fee base would be decreased by \$2,750. The other adjustments listed above were negotiated in prior contract periods.

The revised estimated cost including fee for the contract period is compared to the currently estimated cost in the following table. The amounts in the column P-64-4 include actual cost through January 31, 1964, and in P-64-6 actual costs are included through May 31, 1964.

	P-64-4	P-64-6	Increase or (Decrease)
Mark V-E	\$1,381,269 ^{a/}	\$1,383,007 ^{a/}	\$ 1,738
Mark V-B - Regular	986,313	977,326	(8,987)
Mark V-E - Long	-0-	67,872	67,872
Development	120,509	110,567	(9,942)
Thorium	18,172	62,752	44,580
Tooling	6,145	674	(5,471)
Subtotal	<u>\$2,512,408</u>	<u>\$2,602,198</u>	<u>\$ 89,790</u>
Fab. Equipment	\$ 90,800	\$ 96,878	\$ (6,078)
Purchased Equipment	87,900	63,700	(24,200)
Subtotal	<u>\$ 178,700</u>	<u>\$ 150,578</u>	<u>\$ (28,122)</u>
Total Cost	<u>\$2,691,108</u>	<u>\$2,752,776</u>	<u>\$ 61,668</u>

^{a/} Includes fee on fabricated equipment of \$6,735 and \$6,359, respectively.

USDOE 017822

	<u>P-64-4</u>	<u>P-64-6</u>	<u>Increase or (Decrease)</u>
<u>Production (Delivered)</u>			
Mark V-E - Tons	338	352	14
Mark V-B - Reg. - Tons	363	363	-0-
Mark V-B - Long - Sets	-0-	130	130
Thorium Slugs - Old Program	2,794	2,794	-0-
Thorium Slugs - New Program	-0-	7,000	7,000
<u>Unit Cost (Actual Cost & Production)</u>			
Mark V-E Lb.	\$2.11	\$2.03	\$(.08)
Mark V-B Lb. - Reg.	1.35	1.31	(.04)
Thorium (New) Lb.	-0-	2.23	-0-
Thorium (Old) Lb.	3.21	-0-	-0-

The unit costs for the major products remain relatively stable -- the slight decrease being due to the added activities which bear a portion of fixed overhead.

The unit price on old thorium slugs is that experienced in the period from July to December 1964. A unit cost on a per-slug and per-pound basis is as follows between the old and the new thorium:

	<u>Old</u>	<u>New</u>
Total Cost	\$72,589	\$44,573
Production Lbs.	22,619	20,000
Production Slugs	11,793	7,000
Unit Cost/Slug	\$6.15	\$6.36
Unit Cost/Lb.	\$3.21	\$2.23
<u>Personnel Man-Months</u>		
Direct	1,599	1,637
Expense	227	217
Total	<u>1,826</u>	<u>1,854</u>
No. of Personnel Year End 9/30/64	118	113

It is assumed from the above that the increased work will be performed with overtime or a better utilization of labor will be made than previously anticipated.

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J. S. Hopkins

- 4 -

JUN 20 1964

Overhead - Direct Labor Ratios

	Actual 10/1/63 5/30/64	Actual May 1964	Fee Base	
			Estimate 10/1/63 - 5/30/64 P-64-2	P-64-6
Direct Labor	\$534,000	\$ 50,000	\$733,000	\$769,000
Overhead	689,000	62,000	873,000	898,000
Ratio	129%	124%	119%	117%

The actual overhead ratio expected to be experienced in the contract period is as follows:

	<u>P-64-6</u>
Direct Labor	\$732,000
Overhead	937,000
Ratio	128%

Based on actual overhead experience, the amount included in the base for fee is not considered unreasonable.

(C) Conclusion

We accept Sylcor's proposal (P-64-6 as revised by teletype of 6/22/64) as submitted since a significant increase in scope is to be obtained with only a modest increase in cost and fee.

In future proposals consider elimination of fee on fabricated equipment and request that Sylcor be more comprehensive in analyzing changes.

(D) Contract Finance Information

<u>Cost & Fee by Activity</u>	<u>Cost</u>	<u>Fee</u>	<u>Total</u>
Mark V-E	\$1,300,976	\$ 82,031 ^{a/}	\$1,383,007
Mark V-B - Regular	922,099	55,227	977,326
Mark V-B - Long	64,030	3,842	67,872
Thorium - Old Program	17,507	672	18,179
Thorium - New Program	42,050	2,523	44,573
Development	105,224	5,343	110,567
Tooling	835	39	674
Fabricated Equipment	86,378	^{a/}	86,378
Purchased Equipment	63,700	-0-	63,700
Total	<u>\$2,603,099</u>	<u>\$149,677</u>	<u>\$2,752,776</u>

^{a/} Includes \$6,859 fee on fabricated equipment.

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J. S. Hopkins

- 5 -

JUN 26 1964

Recap of Revised Costs and Commission Obligation

Summary of Estimated Costs and Fixed Fees

	<u>Mod. 36</u>	<u>Incr. (Decr.)</u>	<u>Mod. 37</u>
Operating Cost	\$29,049,454	\$60,519	\$29,109,973
Plant & Capital Equipment (Beginning 7/1/63)	216,289 ^{a/}	-0-	216,289 ^{a/}
Fixed Fee (Operations)	<u>1,634,523</u>	<u>3,769</u>	<u>1,638,292</u>
Total Est. Cost & Fixed Fee	<u>\$30,900,266</u>	<u>\$64,288</u>	<u>\$30,964,554</u>
Commission Obligation	\$30,870,266	\$64,288	\$30,934,554

a/ Includes \$30,000 for first quarter FY 1965 authorizations.
not to be obligated in FY 1964.

Contract Articles

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,326,262, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,638,292. The estimated cost of the work as described in paragraph 1. of the article entitled SCOPE OF WORK for the period October 1, 1963, to September 30, 1964, is \$2,603,099, exclusive of the Contractor's fixed fee of \$149,677."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,870,266" is deleted and the figure "\$30,934,554" is substituted therefor.

3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$149,677."

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$149,677 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	9,963
June 1964 - September 1964	10,311

cc: J. J. Wise, Asst. Mgr. for Adm.
K. J. Donahue, T&P Div.
E. W. Stark, Acctg. Br.
R. A. Messick, Contract Fin. Br.

USDOE 017825

A

WDRG DECLASSIFICATION REVIEW

4/28/64
 Rh Collins
 Authority: ADD
 Name: *[Handwritten]*

1. Classification Unchanged
 2. Classification Changed To:
 3. Classification Cancelled
 4. Other: *CG-RMP-2*
gpd

This document consists of ~~10~~ pages
 No. / ~~1~~ / ~~1~~ copies, Series A.

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED JUNE 30, 1964, UNDER
 MODIFICATION NO. 37

The scope of work to be performed by the Contractor during the period October 1, 1963, through September 30, 1964, as set forth by Modification No. 36 is revised to read as follows:

1. PRODUCTION

A. MARK V-B AND MARK V-E (Inner Fuel)

The Contractor shall manufacture and furnish to the Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark V-B (Tons) Integral Rib	Mark V-E (Tons) Integral Rib
October 1963	45	48
November 1963	47	20
December 1963	44	26
January 1964	41	28
February 1964	29	33
March 1964	19	33
April 1964	26	36
May 1964	24	33
June 1964	26	36
July 1964	12	13
August 1964	25	23
September 1964	25	23

B. EXTENDED LENGTH MARK V-B SLUGS

Effective June 30, 1964, undertake the canning for delivery by September 30, 1964, of 190 sets of extended length Mark V-B slugs.

C. THORIUM

- Complete the canning and delivery of 11,500 Mark VII-T slugs for irradiation at the Savannah River Plant.
- Recover and re clad by December 23, 1963, approximately 500 Mark VII-T slugs to standard quality and dimensional specification except that the slug length is to be 6.400 + 0.070 inch.

GROUP 1
 EXCLUDED FROM AUTOMATIC
 DOWNGRADING AND
 DECLASSIFICATION

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3. Effective June 30, 1964, undertake the swaging, machining, cladding and welding of approximately 7,000 solid thorium slugs for shipment to SRP by August 21, 1964.

II. DEVELOPMENT

A. ELEMENT DEVELOPMENT

1. Long Slugs

Develop a process for canning Mark V-B and Mark V-E IF and OF Elements up to 16" in length by the hot pressure bonding process. Both impact extrusions and tubing will be investigated for cladding.

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

2. Added Rib

Continue development of the canning of Mark V-B IF elements with added ribs. Investigate the use of other types of aluminum for the rib and changes in the physical structure of the rib.

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

3. Tube Cladding

Study the effects of the use of tubing as cladding for Mark V-B and V-E IF hot pressure bonded slugs.

4. Recovery of Mark V-E

Develop a recovery program to reclaim reject Mark V-E IF slugs and reuse the cores. Set up standards, specifications and operating procedures, whereby reject slugs may be declad and reprocessed through the HPB process.

B. TOOLING AND CLADDING MATERIALS

1. Furnace Tooling

Investigate potential improvements in quality and economy attainable through the replacement of Inconel X by such metals as AF71 or Inconel

for furnace tooling, such as mandrels, dies and vacuum pots. Make items of promising materials and test them in the HPB process.

2. Cladding

Investigate potential advantages of low alloys of aluminum as cladding material. Test the most promising materials, such as aluminum with additives of beryllium or germanium, in the HPB process, for further evaluation at SRP.

C. INDUCTION HEATING

1. Heat Pattern Control

Run a series of experiments on HPB induction furnaces to determine actual heat patterns and provide a consistent improved control of the heat applied to the slug.

Investigate the possible use of scanning equipment which will designate the temperature of the die as it leaves the furnace, thereby offering additional improvement of heat pattern control.

2. Cores with Anodic Etch

Investigate possible improvement of HPB strengths by the use of anodic etching of cores before plating and the rapid heat-up cycle attainable with induction furnaces.

D. NONDESTRUCTIVE TESTING

1. Eutectic Prevention

Investigate new methods for the detection of Mark V-B and V-E slugs that have been overheated during the pressing cycle, such as the use of magnetic and hysteresis effects and the chemical test which showed promise with Mark VII-A slugs.

2. Nickel Plate Control

Continue investigation of new types of nickel detection and measurement, such as the magnetic probe, to provide a closer control of the nickel plate on cores.

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED JUNE 30, 1964, UNDER
MODIFICATION NO. 37

3. Uranium Metal Quality

Refine and test ultrasonic equipment for potential use in the detection of metal quality rejects before plating.

4. Aluminum Metal Quality

Investigate methods of improving the detection of metal quality rejects in aluminum cladding components before they are used.

III. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

B

~~CONFIDENTIAL~~

Review Date: 4/28/04 (Source Number)

Start only ADD ADD

Name: R. Collins

End Review Date: 4/28/04

Authority: ADD

Name: R. Collins

1. Classification Unchanged

2. Classification Changed To:

3. Classification Cancelled

4. Other: CG-NMP 2, 9A

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8

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED AUGUST 1, 1964, UNDER
 MODIFICATION NO. 38

The scope of work to be performed by the Contractor during the period October 1, 1963, through September 30, 1964, as set forth by Modification No. 37 is revised to read as follows:

1. PRODUCTION
- A. MARK V-B AND MARK V-E (Inner Fuel)

The Contractor shall manufacture and furnish to the Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark V-B (Tons) Integral Rib	Mark V-E (Tons) Integral Rib
October 1963	45	48
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December 1963	44	26
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June 1964	26	36
July 1964	12	13
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B. EXTENDED LENGTH MARK V-B SLUGS

Effective June 30, 1964, undertake the canning for delivery by September 30, 1964, of 190 sets of extended length Mark V-B slugs.

C. THORIUM

1. Complete the canning and delivery of 11,500 Mark VII-T slugs for irradiation at the Savannah River Plant.
2. Recover and re clad by December 23, 1963, approximately 500 Mark VII-T slugs to standard quality and dimensional specification except that the slug length is to be 6.400 ± 0.070 inch.

GROUP 1

EXCLUDED FROM AUTOMATIC
 DOWNGRADING AND
 DECLASSIFICATION

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SROO Response to
 FOIA (SR) - 04-028

3. Effective June 30, 1964, undertake the swaging, machining, cladding and welding of approximately 13,000 solid thorium slugs for shipment to SRP as follows:

<u>Quantity</u>	<u>Delivery Date</u>
7,000	by August 21, 1964
6,000	by September 30, 1964

II. DEVELOPMENT

A. ELEMENT DEVELOPMENT

1. Long Slugs

Develop a process for canning Mark V-B and Mark V-E IF and OF elements up to 16" in length by the hot pressure bonding process. Both impact extrusions and tubing will be investigated for cladding

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

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Continue development of the canning of Mark V-B IF elements with added ribs. Investigate the use of other types of aluminum for the rib and changes in the physical structure of the rib.

This program shall include the establishment of standards, specifications and operating procedures and all necessary research, development, canning and data accumulation. Also, qualification and reactor test slugs will be made.

3. Tube Cladding

Study the effects of the use of tubing as cladding for Mark V-B and V-E IF hot pressure bonded slugs.

4. Recovery of Mark V-E

Develop a recovery program to reclaim reject Mark V-E IF slugs and reuse the cores. Set up standards, specifications and operating procedures, whereby reject slugs may be declad and reprocessed through the HPB process.

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED AUGUST 1, 1964, UNDER
MODIFICATION NO. 38

B. TOOLING AND CLADDING MATERIALS

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Investigate potential improvements in quality and economy attainable through the replacement of Inconel X by such metals as AF71 or Inconel for furnace tooling, such as mandrels, dies and vacuum pots. Make items of promising materials and test them in the HPB process.

2. Cladding

Investigate potential advantages of low alloys of aluminum as cladding material. Test the most promising materials, such as aluminum with additives of beryllium or germanium, in the HPB process, for further evaluation at SRP.

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1. Heat Pattern Control

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2. Cores with Anodic Etch

Investigate possible improvement of HPB strengths by the use of anodic etching of cores before plating and the rapid heat-up cycle attainable with induction furnaces.

D. NONDESTRUCTIVE TESTING

1. Eutectic Prevention

Investigate new methods for the detection of Mark V-B and V-E slugs that have been overheated during the pressing cycle, such as the use of magnetic and hysteresis effects and the chemical test which showed promise with Mark VII-A slugs.

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED AUGUST 1, 1964, UNDER
MODIFICATION NO. 38

2. Nickel Plate Control

Continue investigation of new types of nickel detection and measurement, such as the magnetic probe, to provide a closer control of the nickel plate on cores.

3. Uranium Metal Quality

Refine and test ultrasonic equipment for potential use in the detection of metal quality rejects before plating.

4. Aluminum Metal Quality

Investigate methods of improving the detection of metal quality rejects in aluminum cladding components before they are used.

III. DU PONT TOOLING

The Contractor shall furnish all materials, services and supplies necessary to perform all work authorized by the Commission in furtherance of the Du Pont Tooling Program.

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U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend Scope of work and other provisions of the
Contract

EFFECTIVE DATE : April 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 36</u>	<u>Increase (Decrease)</u>	<u>Modification No. 37</u>
Operating Cost	\$ 29,049,454	\$ 60,519	\$ 29,109,973
Plant and Capital Equipment (Beginning July 1, 1963)	216,289 a/	-0-	216,289
Fixed Fee (Operations)	<u>1,634,523</u>	<u>3,769</u>	<u>1,638,292</u>
Total Estimated Cost and Fixed Fee	<u>\$ 30,900,266</u>	<u>\$ 64,288</u>	<u>\$ 30,964,554</u>
Commission Obligation	<u>\$ 30,870,266</u>	\$ 64,288	<u>\$ 30,934,554</u>

a/ Includes \$30,000 for first quarter FY 1965 authorizations not to be
obligated in FY 1964.

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USDOE 017327

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 24th day of August, 1964, effective April 1, 1964, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,326,262, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,638,292. The estimated cost of the work as described in paragraph 1. of the article entitled SCOPE OF WORK for the period October 1, 1963, to September 30, 1964, is \$2,603,099, exclusive of the Contractor's fixed fee of \$149,677."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,870,266" is deleted and the figure "\$30,934,554" is substituted therefor.
3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to the work performed during the period October 1, 1963, to September 30, 1964, is \$149,677."

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$149,677 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	9,963
June 1964 - September 1964	10,811"

5. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, revised June 30, 1964, under Modification No. 37, attached hereto and made a part hereof.

6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ H. L. Kilburn

TITLE: Deputy Manager, SROO

WITNESSES:

/s/ M. Boll

Hicksville, N. Y.

(Address)

/s/ M. Steglic

Hicksville, N. Y.

(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ D. B. Metz

TITLE: Manufacturing Manager, Sylcor Div.

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. Toher, certify that I am Assistant Secretary of Sylvania Electric Products Inc., named above; that D. B. Metz, who signed this agreement on behalf of said corporation, was then Manufacturing Manager - Sylcor Division, of said corporation, and that this agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this fourteenth day of August, 1964.

(CORPORATE SEAL)

/s/ J. M. Toher
J. M. Toher, Assistant Secretary

USDOE 017330

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

August 31, 1964

Randall G. Erdley, Chief
Savannah River Patent Group

MODIFICATION NO. 37- SUPPLEMENTAL AGREEMENT TO CONTRACT
AT(30-1)-1293 WITH SYLVANIA ELECTRIC PRODUCTS, INC.

CP:AFW:cm

The subject modification authorizes an increase in obligation of
funds from \$30,870,266 to \$30,934,554 with \$149,677 designated
as fixed fee applicable to work performed during the period
October 1, 1963 to September 30, 1964.

1164-1600-207-2

OFFICE ▶	<i>Patent B1.</i>					
SURNAME ▶	<i>ER</i>					
DATE ▶	<i>8/31/64</i>					

A

UNITED STATES ATOMIC ENERGY COMMISSION
Savannah River Operations Office

FINDINGS AND DETERMINATION

Sylcor Division
Sylvania Electric Products Inc.
Contract AT(30-1)-1293
Modification No. 37

The Atomic Energy Commission proposes to modify its cost-plus-fixed-fee contract with Sylcor Division, Sylvania Electric Products Inc., to amend the scope of work to be performed by the Contractor during the period October 1, 1963, through September 30, 1964.

I hereby find that a modification to the cost-plus-fixed-fee type contract is necessary for the following reasons:

1. Specifications for the production of metal units are not sufficiently definitive to permit entering an immediate unit price arrangement.
2. Program requirements are subject to immediate change.

Upon the basis of the findings set forth above, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee supplemental agreement, and I hereby authorize the use of said supplemental agreement.

BY:



H. L. Kilburn, Deputy Manager

TITLE: Savannah River Operations Office

DATE:

JUN 30 1964

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 37.
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend Scope of work and other provisions of the
Contract

EFFECTIVE DATE : April 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 36</u>	<u>Increase (Decrease)</u>	<u>Modification No. 37</u>
Operating Cost	\$ 29,049,454	\$ 60,519	\$ 29,109,973
Plant and Capital Equipment (Beginning July 1, 1963)	216,289 <u>a/</u>	-0-	216,289
Fixed Fee (Operations)	<u>1,634,523</u>	<u>3,769</u>	<u>1,638,292</u>
Total Estimated Cost and Fixed Fee	<u>\$ 30,900,266</u>	<u>\$ 64,288</u>	<u>\$ 30,964,554</u>
Commission Obligation	\$ 30,870,266	\$ 64,288	\$ 30,934,554

a/ Includes \$30,000 for first quarter FY 1965 authorizations not to be obligated in FY 1964.

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U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 24th day of August, 1964, effective April 1, 1964, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,326,262, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,638,292. The estimated cost of the work as described in paragraph 1. of the article entitled SCOPE OF WORK for the period October 1, 1963, to September 30, 1964, is \$2,603,099, exclusive of the Contractor's fixed fee of \$149,677."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,870,266" is deleted and the figure "\$30,934,554" is substituted therefor.

3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to the work performed during the period October 1, 1963, to September 30, 1964, is \$149,677."

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$149,677 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	9,963
June 1964 - September 1964	10,811"

5. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, revised June 30, 1964 under Modification No. 37, attached hereto and made a part hereof.

6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION
BY: H. L. Kilburn
H. L. Kilburn, Deputy Manager
TITLE: Savannah River Operations Office

WITNESSES:

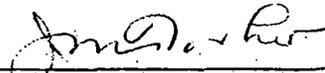
M. Boe
Hicksville, N.Y.
(Address)
M. Boe
Hicksville, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: D. B. Metz
D. B. Metz
TITLE: Manufacturing Manager, Sylcor Div.

Modification No. 37
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. Toher, certify that I am Assistant Secretary of Sylvania Electric Products Inc., named above; that D. B. Metz, who signed this agreement on behalf of said corporation, was then Manufacturing Manager-Sylcor Division, of said corporation, and that this agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

WITNESS my hand and seal of said corporation this fourteenth day of August, 1964.



J. M. Toher, Assistant Secretary

(Corporate Seal)

UNITED STATES GOVERNMENT

This document consists of 2 pages,

Memorandum

No. 1 of 2 copies, Series A

TO : J. S. Hopkins, Director
Administrative Division
James R. Jones
FROM : *for* A. Y. Morgan, Director
Budget & Finance Division

UNCLASSIFIED

DATE: AUG 27 1964

SUBJECT: REVIEW OF SYLCOR PROPOSAL P-64-7

FB:MER:jl

We have reviewed Sylcor's proposal (P-64-7, August 21, 1964). The proposal covers revised costs in August and September, 1964.

The following scope changes, cost analysis, conclusion and contract finance information are submitted for your consideration in preparing Modification 38 to the contract.

(A) Scope Changes (From P-64-6)

- (1) Increase in Thorium canning 6,000 slugs
- (2) Decrease in Mark V-B canning 12 tons.

(B) Cost Changes

To accomplish the above net change in scope, Sylcor estimates a net decrease in cost subject to fee of \$11,850 with a decrease in fee of \$711. From our analysis of the change in scope and cost changes, we believe this change in cost and fee to be reasonable and acceptable.

DEPARTMENT OF ENERGY-SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date <u>4/3/63</u>	Determination (Circle Number)
Authority: <input checked="" type="checkbox"/> ADC <input type="checkbox"/> ADD	1. Classification Unchanged
Name: <u>J.B. Slack</u>	2. Classification changed to:
2nd Review Date <u>4/8/63</u>	<input checked="" type="checkbox"/> 3. Classification Canceled
Authority: <u>ADD</u>	4. Other: <u>CG-NR-2</u> <u>9-00</u>
Name: <u>Wesley R. Darden</u>	



GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION.

UNCLASSIFIED

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Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

AUG 27 1964

Analysis of Change in Fee Base P-64-7

	<u>Proposed P-64-7</u>		<u>Current P-64-6</u>		<u>Change</u>	
	<u>Cost</u>	<u>Fee</u>	<u>Cost</u>	<u>Fee</u>	<u>Cost</u>	<u>Fee</u>
Mark V-E	\$1,238,860	\$ 74,332	\$1,252,860	\$ 75,172	\$(14,000)	\$(840)
Mark V-B (Reg.)	888,500	53,310	920,450	55,227	(31,950)	(1,917)
Mark V-B (12")	68,920	4,135	64,030	3,842	4,890	293
Dev.	90,850	5,451	90,850	5,451	-0-	-0-
Tooling	650	39	650	39	-0-	-0-
Thorium	81,050	4,863	53,250	3,195	27,800	1,668
Equipment	115,730	6,944	114,320	6,859	1,410	85
Adj. Zirc. (Prior)	(1,800)	(108)	(1,800)	(108)	-0-	-0-
Total	<u>\$2,482,760</u>	<u>\$148,966</u>	<u>\$2,494,610</u>	<u>\$149,677</u>	<u>\$(11,850)</u>	<u>\$(711)</u>

<u>Fee Base by Type of Expense</u>	<u>P-64-6</u>	<u>P-64-7</u>	<u>Change</u>
Direct Labor	\$ 769,010	\$ 764,590	\$(4,420)
Direct Materials	676,380	674,680	(1,700)
Overhead	897,840	892,410	(5,430)
G&A	176,230	175,930	(300)

<u>Adjustments</u>			
Tooling (P-64-4)	(12,000)	(12,000)	
Tooling (P-64-6)	(2,750)	(2,750)	
Fab. Equip. (P-64-4)	(8,300)	(8,300)	
Dev. Prior (P-64-2)	(1,800)	(1,800)	
Net Fee Base	<u>\$2,494,610</u>	<u>\$2,482,760</u>	<u>\$(11,850)</u>
Fee @ 6%	<u>\$ 149,677</u>	<u>\$ 148,966</u>	<u>\$(711)</u>

We have reviewed overhead to direct labor ratios, unit costs and personnel and find no significant variations from the proposal authorized on June 26, 1964.

Total estimated costs changes are as follows. The variations are due to underrun in June and July and to the changes in scope outlined above. Actual costs are included for the period October 1, 1963 to July 31, 1964 and estimates from P-64-7 for August and September 1964.

AUG 27 1964

<u>Activity</u>	<u>P-64-6</u>	<u>P-64-7</u>	<u>Change</u>
Mark V-E	\$1,383,007	\$1,355,095	\$(27,912)
Mark V-B - Regular	977,326	936,810	(40,516)
Mark V-B - Long	67,872	65,913	(1,959)
Development	110,567	110,567	-0-
Thorium	62,752	93,106	30,354
Tooling	674	674	-0-
Fabricated Equipment	86,878	82,056	(4,822)
Purchased Equipment	63,700	60,800	(2,900)
Total	<u>\$2,752,776</u>	<u>\$2,705,021</u>	<u>\$(47,755)</u>

(C) Conclusion

Based on actual production quantities through June, 1964, it would appear that Sylcor will deliver the contracted quantities of slugs in the contract period.

We recommend that the proposal (P-64-7) be accepted as submitted.

(D) Contract Finance Information

<u>Cost and Fee by Activity</u>	<u>Cost</u>	<u>Fee</u>	<u>Total</u>
Mark V-E	\$1,273,819	\$ 81,276 ^{a/}	\$1,355,095
Mark V-B - Regular	883,500	53,310	936,810
Mark V-B - Long	61,778	4,135	65,913
Thorium	88,243	4,863	93,106
Development	105,224	5,343	110,567
Tooling	635	39	674
Fabricated Equipment	82,056	a/	82,056
Purchased Equipment	60,800	-0-	60,800
Total	<u>\$2,556,055</u>	<u>\$148,966</u>	<u>\$2,705,021</u>

a/ Includes \$6,944 fee on Fabricated Equipment.

AUG 27 1964

Recap of Revised Costs and Commission Obligation:

Summary of Estimated Costs and Fixed Fee

	<u>Mod. 37</u>	Increase (Decrease)	<u>Mod. 38</u>
Operating Cost	\$29,109,973	\$(39,322)	\$29,070,651
Plant and Capital Equipment (Beginning 7/1/63)	208,567 216,289	(7,722)	208,567
Fixed Fee	1,638,292 1,637,581	(711)	1,637,581
Total Est. Cost and Fixed Fee	\$30,964,754 30,916,799	<u>\$(47,755)</u>	<u>\$30,916,799</u>

Commission Obligations

Operating Cost	\$29,070,651
Plant and Capital Equipment	216,289 208,567
Fixed Fee	<u>1,637,581</u>
Total Commission Obligation	<u>\$30,924,521</u> <u>30,916,799</u>

Contract Articles:

1. Paragraph 1, Estimate of Cost and Fixed Fee, of Article IV - Estimates of Costs, Obligation of Funds and Fixed Fee, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under the Contract is \$29,279,218, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in Paragraph 2, of Article V of the Contract is \$1,637,581. The estimated cost of the work as described in Paragraph 1 of the Article entitled Scope of Work for the period October 1, 1963, to September 30, 1964, is \$2,556,055, exclusive of the Contractor's fixed fee of \$148,966."

2,556,055
148,966
2,705,021

2. In Paragraph 2, Obligation of Funds, of Article IV - Estimates of Cost, Obligation of Funds, and Fixed Fee, the figure "\$30,934,554" is deleted and the figure "\$30,924,521" is substituted therefor.
916,799

AUG 27 1964

3. Sub-paragraph (e) of Paragraph 2, Fixed Fee, of Article V - Allowable Cost and Fixed Fee, is revised to read as follows:

"(e) The fixed fee applicable to the work performed during the period October 1, 1963, to September 30, 1964, is \$148,966."

4. Sub-paragraph (e) of Paragraph 2, Payment of Fixed Fee, of Article VI - Payments, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$148,966 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	9,963
June 1964 - July 1964	10,811
August 1964 - September 1964	10,492

cc: J. J. Wise, Manager's Office
R. A. Messick, B&F Div.
N. J. Donahue, T&P

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *A. Y. Morgan*
A. Y. Morgan, Director
Budget and Finance Division

SUBJECT: REVIEW SYLCOR PROPOSAL P-65-1

FB:MER:jl

DATE: SEP 24 1964

Document No. SR-FB-1078

This document consists of 2 pages,

No. 1 of 2 copies, Series A

We have reviewed Sylcor's Proposal P-65-1, DCF #2608-H, dated September 10, 1964 for the period October 1, 1964 to September 30, 1965, and submit the following comments, cost analysis, conclusion and contract finance information.

Comments

This Proposal was discussed with Sylcor representatives at NYOO on September 18, 1964 with the following in attendance:

DEPARTMENT OF ENERGY SAVANNAH RIVER RECLASSIFICATION REVIEW
 Determination (Circle Number)
 1. Classification Unchanged
 2. Classification changed to:
 3. Classification Canceled
 4. Other: CG-NRP-2 9-00

1st Review Date 4/3/03
 Authority: EJ ADX
 Name: G.B. [unclear]
 2nd Review Date 4/3/03
 Authority: ADD
 Name: Deaver [unclear]

SROO

J. J. Wise
 * N. J. Donahue
 Robert McFeely
 Martin Robinson

Sylcor

Boyd Metz
 Bill Mandaro
 Milton Boll
 Bill Crowley
 A. L. Gannon

The financial points discussed were:

a) Budget

The Sylcor Proposal as submitted is about \$281,000 more than is included for Sylcor in the SROO Budget. Sylcor was informed that the budget for FY 1965 is extremely tight and that measures should be continued to keep costs as low as possible. Jack Donahue informed us that Sylcor production would probably be cut back and that their level in FY 1965 would probably not exceed the financial plan.

b) Thorium

Sylcor had included \$6,000 for thorium costs in October. We had understood that the thorium program was to have been completed by the end of September 1964. Sylcor informed us that the costs included for October were for clean-up of the equipment and shipment of scrap and that although the canning program for thorium had slipped due to difficulties in metal quality that the above \$6,000 was not carry-over funding.



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(c) Overhead Ratios

The ratio of overhead to direct labor continues to rise. The ratio in the contract period ending September 30, 1964 was 117%; the ratio for the period 10/1/64 to 9/30/65 was 146%.

Sylcor informed us that they realized the ratios were increasing but that certain items of overhead such as occupancy and security were relatively fixed and couldn't be reduced in relation to direct labor, but that continuing review was made to assure that overhead items related to direct labor were held to a minimum.

(d) Fee on Fabricated Equipment

In past periods we have had difficulties in relating variation in fabricated equipment to cost underrun or to scope changes. Consequently, in this proposal Sylcor was asked to only include items of fabricated equipment that could be specifically identified. Then if variations occur they can be identified and it was agreed between SRO and Sylcor that the fee would be adjusted accordingly. Sylcor will provide SRO copies of equipment work orders for information only.

(e) Cost Reduction

It was re-emphasized to Sylcor that close attention should be given to cost reduction, and that it is highly important to be realistic in reporting cost reductions since they are being measured against the budget.

Cost Analysis

The estimated cost by program for the ensuing period as compared to the preceding period is as follows:

<u>Activity</u>	<u>P-64-7</u> <u>10-1-63</u> <u>9-30-64</u>	<u>P-65-1</u> <u>10-1-64</u> <u>9-30-65</u>	<u>Variation</u>
Mark V-E	\$1,355,095 ^{a/}	\$ 912,479 ^{a/}	
Mark V-B Reg.	936,810	540,695	
Mark V-B Long	65,913	106,116	
Thorium	93,106	6,105	
Development	110,567	-0-	
Tooling	674	-0-	
Fabricated Equipment	82,056	49,600	
Purchased Equipment	60,800	40,400	
Total Costs	<u>\$2,705,021</u>	<u>\$1,655,395</u>	<u>\$(1,049,626)</u>

a/ Includes fee on fabricated equipment of \$6,944 and \$2,977, respectively.

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J. S. Hopkins

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SEP 28 1964

<u>Production (Lbs.)</u>	<u>P-64-7</u>	<u>P-65-1</u>	<u>Variation</u>
Mark V-E	\$ 682,000	\$ 552,000	\$ (130,000)
Mark V-B Reg.	723,000	456,000	(267,000)
Unit Cost V-E	\$1.99	\$1.65	\$(.34)
Unit Cost V-B	1.29	1.19	(.10)

As indicated above, unit costs reflect a desirable decrease even though production and total costs show also a significant decrease. In discussions with Sylcor it was determined that these improvements are due to cost reduction implementation.

Fee Base

The comparison between the fee base for the two periods is as follows:

Direct Labor	\$ 764,590	\$ 442,530
Direct Material	674,680	304,000
Overhead	892,410	644,720
G & A	175,930	132,330
Adjustments	<u>(24,850)</u>	<u>-0-</u>

Subtotal	<u>\$2,482,760</u>	<u>\$1,523,580</u>
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Fee @ 6%	148,966	91,415
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Ratio Overhead to
Direct Labor

Overhead	892,410	644,720
Direct Labor	<u>764,590</u>	<u>442,530</u>
Ratio	<u>117%</u>	<u>146%</u>

The actual overhead direct labor ratio was about 127% in the contract year ending 9/30/64.

G & A Ratios

Cost Excl. G & A	2,331,680	1,391,250
G & A	<u>175,930</u>	<u>132,330</u>
Ratio	7.5%	9.5%

As with overhead it is assumed that certain G & A items (particularly Division G & A) are relatively fixed and ratios will increase as scope of total costs decline.

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USDOE 017809

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J. S. Hopkins

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SEP 24 1964

<u>Personnel Man-Months</u>	<u>P-64-7</u>	<u>P-65-1</u>
Mark V-E	801	552
Mark V-B	610	407
Thorium	72	5
Development	73	-0-
Fabricated Equipment Expense	78 <u>214</u>	41 <u>156</u>
Total	<u>1,848</u>	<u>1,161</u>
Year Ending 9/30/64	113	-
9/30/65	-	89

The reduction in personnel is due to a reduction in production.

Conclusion

Accept the proposal as submitted. This was agreed at the meeting at NYO on September 18, 1964.

Contract Finance Information

	<u>Cost</u>	<u>Fee</u>	<u>Total</u>
Mark V-E	\$ 858,020	\$ 54,459 ^{a/}	\$ 912,479
Mark V-B Reg.	510,090	30,605	540,695
Mark V-B Long	100,110	6,006	106,116
Thorium	5,760	345	6,105
Fabricated Equipment	49,600	a/	49,600
Purchased Equipment	<u>40,400</u>	<u>-0-</u>	<u>40,400</u>
Total	<u>\$1,563,980</u>	<u>\$ 91,415</u>	<u>\$1,655,395</u>

a/ Includes fee on fabricated equipment of \$2,977.

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USDOE 017810

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J. S. Hopkins

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SEP 24 1964

Obligations under the contract should be increased as follows:

	<u>Operating Cost</u>	<u>Equipment</u>	<u>Total</u>
Operating Cost & Fee 10/1/64 - 9/30/65	\$1,232,019		
Operating Cost & Fee 7/1/64 - 9/30/65	<u>333,376</u>		
Total	<u>\$1,565,395</u>	<u>\$ 90,000</u>	<u>\$1,655,395</u>
Less Underrun in FY 1964 and Prior Yr. Projects (\$15,000 less \$7,722 de- obligated by Mod. No. 38)	<u>-</u>	<u>(7,278)</u>	<u>(7,278)</u>
Total	<u>\$1,565,395</u>	<u>\$ 82,722^{a/}</u>	<u>\$1,648,117</u>
First Qtr. FY 1966 Equip. Auths. not to be Obligated in FY 1965	<u>-</u>	<u>(15,000)</u>	<u>(15,000)</u>
<u>Other FY 1965 Items</u>			
Stores	(9,825)	-	(9,825)
Working Capital	<u>(24,564)</u>	<u>-</u>	<u>(24,564)</u>
Subtotal	<u>(34,389)</u>	<u>-</u>	<u>(34,389)</u>
Net Increase	<u>\$1,531,006</u>	<u>\$ 67,722</u>	<u>\$1,598,728</u>

a/ Includes \$15,000 for first quarter FY 1966 authorizations not to be obligated in FY 1965.

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USDOE 017811

Recap of Revised Costs and Commission Obligation:

Summary of Estimated Costs and Fixed Fee

	<u>Mod. 38</u>	<u>Increase (Decrease)</u>	<u>Mod. 39</u>
Operating Cost	\$29,070,651	\$1,439,591	\$30,510,242
Plant and Capital Equipment (Beginning 7/1/63)	208,567	82,722	291,289
Fixed Fee	<u>1,637,581</u>	<u>91,415</u>	<u>1,728,996</u>
Total Est. Cost & Fixed Fee	<u>\$30,916,799</u>	<u>\$1,613,728</u>	<u>\$32,530,527</u>

Commission Obligations

Operating Cost	29,070,651	1,439,591	30,510,242
Plant and Capital Equipment	208,567	67,722	276,289
Fixed Fee	<u>1,637,581</u>	<u>91,415</u>	<u>1,728,996</u>
Total Commission Obligation	<u>\$30,916,799</u>	<u>\$1,598,728</u>	<u>\$32,515,527</u>

Contract Articles:

1. In Paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, the date "September 30, 1964," is deleted and the date "September 30, 1965," is substituted therefor.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,801,531, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,728,996. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,563,980, exclusive of the Contractor's fixed fee of \$91,415."
3. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,916,799" is deleted and the figure "\$32,515,527" is substituted therefor.

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J. S. Hopkins

-7-

SEP 24 1964

4. The following new subparagraph (f) is added to paragraph 2.,
Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE:

"(f) The fixed fee applicable to work performed during the
period October 1, 1964, to September 30, 1965, is \$91,415."

5. The following new subparagraph (f) is added to paragraph 2.,
Payment of Fixed Fee, of Article VI - PAYMENTS:

"(f) For the period October 1, 1964, through September 30, 1965,
ninety percent (90%) of the fixed fee of \$91,415 shall become
due and payable in monthly installments of \$6,856."

cc: J. J. Wise, Manager's Office, cy. 2A
R. A. Messick, B&F Division, cy. 3A
N. J. Donahue, T&P Division, cy. 4A

~~SECRET~~

USDOE 017813

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

September 29, 1964

Randall G. Erdley, Chief
Savannah River Patent Group

CONTRACT AT(30-1)-1293 WITH SYLVANIA ELECTRIC PRODUCTS, INC.

CP:AFW:cm

The subject contract has been extended from October 1, 1964 to
September 30, 1965 by a TWX dated September 28, 1964.

Sylvania Electric Products, Inc. has submitted a voucher requesting
payment of a fee retainer for the fiscal year ending June 30, 1964
in the subject contract.

It would be appreciated if you would furnish an interim patent clearance
certificate for the period ending June 30, 1964.

cc: H. S. Potter, NYOO

P.S. TO POTTER: Please advise if we may be of any assistance in
this matter.

OFFICE ▶	<i>Patent B.A.</i>				
SURNAME ▶	<i>R.G. Erdley</i>				
DATE ▶	<i>9/29/64</i>				

A

WSAC

1st Review Date: 4/28/04 Denomination (Article Number)

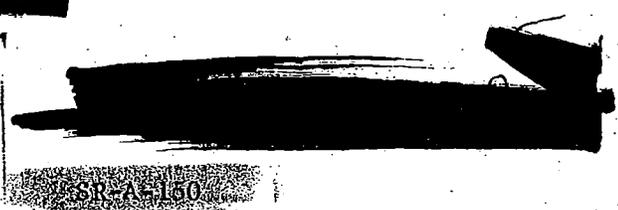
Authority: ADC ADD 1. Classification Unchanged

Name: R.L. Collins 2. Classification Changed to

2nd Review Date: 4/28/04

Authority: ADD 3. Classification Cancelled

Name: M.M. 4. Other: CG-AMP 2
9/00



SR-A-160

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED OCTOBER 1, 1964, UNDER
 MODIFICATION NO. 39

As provided for in paragraph 1. of Article I of Modification No. 29 of Contract No. AT(30-1)-1293, this Appendix "B" describes the scope of work to be performed by the Contractor during the period October 1, 1964, through September 30, 1965.

1. PRODUCTION

A. MARK V-B AND MARK V-E (Inner Fuel)

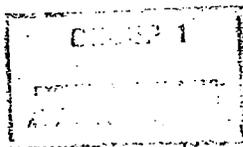
The Contractor shall manufacture and furnish to the Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark V-B (Tons) <u>Integral Rib</u>	Mark V-E (Tons) <u>Integral Rib</u>
October 1964	21	26
November 1964	18	22
December 1964	19	23
January 1965	19	23
February 1965	19	23
March 1965	22	27
April 1965	20	24
May 1965	19	23
June 1965	21	25
July 1965	12	13
August 1965	19	24
September 1965	19	23

B. EXTENDED LENGTH MARK V-B SLUGS

Undertake the canning of 560 sets of extended length Mark V-B slugs for delivery in accordance with the following schedule:

- 75 sets by October 19, 1964
- 175 sets by December 14, 1964
- 310 sets by February 28, 1965



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U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions of the
Contract

EFFECTIVE DATE : August 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 37</u>	<u>Increase (Decrease)</u>	<u>Modification No. 38</u>
Operating Cost	\$29,109,973	\$(39,322)	\$29,070,651
Plant and Capital Equipment (Beginning July 1, 1963)	216,289	(7,722)	208,567
Fixed Fee (Operations)	<u>1,638,292</u>	<u>(711)</u>	<u>1,637,581</u>
Total Estimated Cost and Fixed Fee	<u>\$30,964,554</u>	<u>\$(47,755)</u>	<u>\$30,916,799</u>
Commission Obligation			<u>\$30,916,799</u>

~~SECRET~~

document transmitted herewith contains

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this document as UNCLASSIFIED

CONFORMED COPY

USDOE 017332

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 14th day of October, 1964, effective August 1, 1964, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATIONS OF FUNDS AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,279,218, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2. of Article V of the Contract is \$1,637,581. The estimated cost of the work as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1963, to September 30, 1964, is \$2,556,055, exclusive of the Contractor's fixed fee of \$148,966."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,934,554" is deleted and the figure "\$30,916,799" is substituted therefor.

3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to the work performed during the period October 1, 1963, to September 30, 1964, is \$148,966."

USDOE 017333

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$148,996 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	9,963
June 1964 - July 1964	10,811
August 1964 - September 1964	10,492

5. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, revised August 1, 1964, under Modification No. 38, is attached hereto and made a part hereof.
6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, SROO

WITNESSES:

/s/ Grace Golden

Hicksville, L.I., New York
(Address)

/s/ Mary G. Steglic

Hicksville, L. I., New York
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ D. B. Metz

TITLE: Manufacturing Manager
Sylcor Division

A

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT TO: Amend scope of work and other provisions of the
Contract

EFFECTIVE DATE : August 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 37</u>	<u>Increase (Decrease)</u>	<u>Modification No. 38</u>
Operating Cost	\$29,109,973	\$(39,322)	\$29,070,651
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Fixed Fee (Operations)	<u>1,638,292</u>	<u>(711)</u>	<u>1,637,581</u>
Total Estimated Cost and Fixed Fee	<u>\$30,964,554</u>	<u>\$(47,755)</u>	<u>\$30,916,799</u>
Commission Obligation			<u>\$30,916,799</u>



U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office.

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 14th day of October, 1964, effective August 1, 1964, unless otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATIONS OF FUNDS AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,279,218, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2. of Article V of the Contract is \$1,637,581. The estimated cost of the work as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1963, to September 30, 1964, is \$2,556,055, exclusive of the Contractor's fixed fee of \$148,966."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,934,554" is deleted and the figure "\$30,916,799" is substituted therefor.

3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to the work performed during the period October 1, 1963, to September 30, 1964, is \$148,966."

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

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"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$148,996 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	9,963
June 1964 - July 1964	10,811
August 1964 - September 1964	10,492

5. Appendix "B" Modification No. 29, Contract AT(30-1)-1293, revised August 1, 1964, under Modification No. 38, is attached hereto and made a part hereof.

6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: [Signature]

F. C. Elzy, Manager

TITLE: Savannah River Operations Office

WITNESSES:

[Signature]

[Signature]
(Address)

[Signature]

[Signature]
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: [Signature]

D. B. Metz

TITLE: Manufacturing Manager
Sylcor Div.

Modification No. 38
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. TOOTER, certify that I am ASSI. SECRETARY
of Sylvania Electric Products Inc., named above; that D. B. METZ
who signed this Agreement on behalf of said corporation, was then MFG. MGR
Bycon Div. of said corporation, and that this Agreement was
duly signed for and in behalf of said corporation by authority of its governing
body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 2nd day of OCTOBER,
1964.

(CORPORATE SEAL)

J. M. Tooter

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT: Amend scope of work and other provisions of the
Contract

EFFECTIVE DATE : October 1, 1964

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION:

	<u>Modification No. 38</u>	<u>Increase (Decrease)</u>	<u>Modification No. 39</u>
Operating Cost	\$29,070,651	\$1,439,591	\$30,510,242
Plant and Capital Equipment (Beginning July 1, 1963)	208,567	82,722	291,289 a/
Fixed Fee (Operations)	<u>1,637,581</u>	<u>91,415</u>	<u>1,728,996</u>
Total Estimated Cost and Fixed Fee	<u>\$30,916,799</u>	<u>\$1,613,728</u>	<u>\$32,530,527</u>
Commission Obligation			<u>\$32,515,527</u>

a/ Includes \$15,000 for first quarter FY 1966 authorizations not to be obligated in FY. 1965.

~~SECRET~~

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When so indicated, this document is UNCLASSIFIED

USDOE 017339

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 24th day of November, 1964, effective October 1, 1964, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, the date "September 30, 1964," is deleted and the date "September 30, 1965," is substituted therefor.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,801,531, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,728,996. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work, for the period October 1, 1964, to September 30, 1965, is \$1,563,980, exclusive of the Contractor's fixed fee of \$91,415."
3. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,916,799" is deleted and the figure "\$32,515,527" is substituted therefor.

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. The following new subparagraph (f) is added to paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE:

"(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$91,415."

5. The following new subparagraph (f) is added to paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$91,415 shall become due and payable in monthly installments of \$6,856."

6. Appendix "B" Modification No. 29, as amended, is further amended as of October 1, 1964, and is attached hereto and made a part hereof.

7. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, SROO

WITNESSES:

/s/ Grace Golden

Hicksville, L. I., N. Y.

(Address)

/s/ Mary G. Steglic

Hicksville, N. Y.

(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ W. R. Mandaro

TITLE: Manufacturing Manager

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. Toohar, certify that I am Assistant Secretary
of Sylvania Electric Products Inc., named above; that W. R. Mandaro
who signed this Agreement on behalf of said corporation, was then Mfg. Mgr.
Sylcor Division of said corporation, and that this Agreement was duly
signed for and in behalf of said corporation by authority of its governing body
and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 9th day of November
1964.

/s/ J. M. Toohar

(CORPORATE SEAL)

~~SECRET~~

UNCLASSIFIED

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

December 3, 1964

Randall G. Erdley, Chief
Savannah River Patent Group

CONTRACT AT(30-1)-1293 SYLVANIA ELECTRIC PRODUCTS, INC.
MOD. NO. 39 (DATED OCTOBER 1, 1964)

Document No. SR-C-235

CP:RGE:cm

This document consists of 1 pages
No. 3 of 3 copies. Series A

The subject contract has been extended to September 30, 1965 to provide for additional production of Mark V-B and Mark V-E fuel slugs.

Estimated cost..... \$1,563,980

Fixed fee..... 91,415

New obligation of funds.....\$32,515,527.

- Cy. 1 - R. A. Anderson
- 2 - Official File
- 3 - Reading file

DEPARTMENT OF ENERGY SAVANNAH RIVER PATENT GROUP - UNCLASSIFIED	
1st Review Date 3-28-63	Classification (Circle Number)
Authority: EADD	1. Classification Unchanged
Name: J. B. Slack	2. Classification changed to:
2nd Review Date 3-28-64	3. Classification Cancelled
Authority: ADD	4. Other: CG-NMP-2 9/60
Name: R. A. Anderson	

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the Atomic Energy Act of 1954 and is to be controlled in accordance with the provisions of the Atomic Energy Act of 1954 and Executive Order 12958. No unauthorized disclosure is permitted.~~

UNCLASSIFIED

OFFICE ▶	Patent B.a.					
SURNAME ▶	RGE					
DATE ▶	12-3-64					

~~SECRET~~

A

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT: Amend scope of work and other provisions of the
Contract

EFFECTIVE DATE : October 1, 1964

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	<u>Modification No. 38</u>	<u>Increase (Decrease)</u>	<u>Modification No. 39</u>
Operating Cost	\$29,070,651	\$1,439,591	\$30,510,242
Plant and Capital Equipment (Beginning July 1, 1963)	208,567	82,722	291,289 a/
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a/ Includes \$15,000 for first quarter FY 1966 authorizations not to be obligated in FY 1965.

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

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WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In paragraph 1., Term, of Article III - TERM, EXPIRATION AND TERMINATION, the date "September 30, 1964," is deleted and the date "September 30, 1965," is substituted therefor.
2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,801,531, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,728,996. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work, for the period October 1, 1964, to September 30, 1965, is \$1,563,980, exclusive of the Contractor's fixed fee of \$91,415."
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SYLVANIA ELECTRIC PRODUCTS INC.

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"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$91,415 shall become due and payable in monthly installments of \$6,856."

6. Appendix "B" Modification No. 29, as amended, is further amended as of October 1, 1964, and is attached hereto and made a part hereof.

7. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: _____

TITLE: _____

WITNESSES:

Grace Golden
Hecksweire R J ny
(Address)

Mary R. Stylic
Hecksweire R J
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: _____

W. R. Mandaro
TITLE: Manufacturing Manager
Sylcor Division

Modification No. 39
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. TOCHER, certify that I am ASST. SECRETARY
of Sylvania Electric Products Inc., named above; that W. R. MANDARO
who signed this Agreement on behalf of said corporation, was then MFG MGR
SYLVAR DIVISION of said corporation, and that this Agreement was duly
signed for and in behalf of said corporation by authority of its governing body
and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 9th day of NOVEMBER
1964.

J. M. Tocher

(CORPORATE SEAL)

A

SYLVANIA ELECTRIC PRODUCTS INC.SYLOR DIVISION

Attachment "A" 10

HICKSVILLE, NEW YORK

Effective JAN. 1, 1965

Use of Government Owned Facilities
In Performance of Private Commercial Work

- I. For purposes of this agreement all private commercial work will be referred to as "outside work" and will be considered work for the Sylor Commercial Plant at Hicksville. All outside work to be performed will be requested on the Sylor Work Order Form to be approved by the AEC SROO prior to start of work (or in accordance with agreements to be made with AEC).
- II. The work under Contract AT(30-1)-1293 shall at all times, and without any qualification or limitation whatsoever, have the absolute priority in time, effort, and in all other significant respects over any outside work. This agreement excludes all cost type work performed under an Appendix "C" agreement sponsored by the AEC as provided for in the contract under paragraph 2 of article 1.
- III. The work to be performed under this agreement will exclude the AEC Production, Inspection and Process Control Departments including the area occupied, equipment and personnel of these departments. These departments will hereinafter be referred to as AEC Operations Departments.
- IV. The work to be performed under this agreement will include the Area Occupied, Equipment and Personnel of the following departments hereinafter referred to as Production Support Departments:

<u>Dept. #</u>	<u>Name</u>
21	Chemical Services
23	Engineering Dept.
24	Machining Services
27	Plant Engineering (Drafting & Maint.)
28	Metallography Services

- V. The AEC Plant (Contract 1293) expenses will be credited monthly on a full cost reimbursement basis for all outside work performed by the Production Support Departments for the sum total of the following expenses:

1. Direct Labor

Based on actual time card charges to job numbers assigned to outside work.

continue!

SYLVANIA ELECTRIC PRODUCTS INC.

SYLCOF DIVISION

HICKSVILLE, NEW YORK

Page 2

V. (continued)

2. Overhead

An overhead rate to be applied to direct labor which represents total AEC Plant overhead including all service department prorates and security department expenses.

A provisional rate will be established for interim use on outside work. This provisional rate will be adjusted to actual on a semi-annual basis.

3. Depreciation of AEC Owned Equipment

An overhead rate to be applied to direct labor which represents the depreciation of the equipment included in the production support departments. The amount charged will be calculated using the depreciation rates recorded on AEC records and will include an amount to represent depreciation on fully depreciated items.

A provisional rate will be established for interim use on outside work. This provisional rate will be adjusted to actual on a semi-annual basis.

The depreciation overhead rate will be arrived at by dividing the total direct labor of the Production Support Departments into the total depreciation dollars of the equipment in these departments plus an allocation of the Administration Department equipment depreciation. Due to the specialized nature of the plating equipment a separate rate will be established for outside plating work in the event such work becomes available.

4. Stores Materials

Any common use materials withdrawn from the stockroom for use on outside work will be charged to the job on the basis of a properly approved Stores Acquisition charging the appropriate outside work order.

5. Charge For AEC Administration

A factor to be agreed upon by the parties will be applied to the sum of items 1 through 4 above. This amount will be credited to the AEC contract and will represent a charge for AEC administration of the procedures of this agreement.

continued -

SYLVANIA ELECTRIC PRODUCTS INC.

SYLCO DIVISION

HICKSVILLE, NEW YORK

Page 3

- VI. The Work Order form will show the job number, customer, estimated cost in detail and a complete description of the work to be done and the facilities to be used. The period of performance will also be indicated on the work order. Work will not be contracted for in excess of a six (6) month period.
- VII. An up-to-date listing of all equipment included in the Production Support Departments will be maintained showing tag number, date acquired, first cost, annual and monthly depreciation amounts. This listing will substantiate the monthly depreciation amounts to be used in developing the Depreciation Overhead Rate described in Article V Paragraph 3.

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *A. Y. Morgan*
A. Y. Morgan, Director
Budget and Finance Division

DATE: JAN 20 1965

SUBJECT: REVIEW SYLOR PROPOSAL P-65-2 (REVISED)

Document No. SR-FB-1109

FB:MER:ac

This document consists of 4 pages,

No. 1 of 7 copies. Series A

We have reviewed Sylcor's proposal P-65-2 of December 11, 1964 (DCF 2646-H) for the period October 1, 1964 to September 30, 1965 and submit the following for your consideration in preparation of a modification to the contract.

A. Scope Changes

- (1) Mark V-B reduction - 164 tons
- (2) Mark V-E reduction - 28 tons
- (3) Equipment - \$30,000 cost reduction

DEPARTMENT OF ENERGY-SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date <u>4/3/03</u>	Determination (Circle Number)
Authority: <u>SIADIC DADD</u>	1. Classification Unchanged
Name: <u>G.B. Slack</u>	2. Classification changed to:
2nd Review Date <u>11/10/03</u>	
Authority: <u>ADD</u>	3. Classification Canceled
Name: <u>William J. Rendon</u>	4. Other: <u>CG-NMP7 9-00</u>

The production of Mark V-B is discontinued after January 1965. For the period February 1965 through September 30, 1965, the only production by Sylcor will be Mark V-E at the rate of about 20 tons per month.

The reduction in scope as outlined above results in a net reduction in costs subject to fee for the period of \$281,900 and a fixed fee reduction of \$16,914 as follows:

	Estimates P-65-1		Estimates P-65-2		Change	
	Cost	Fee	Cost	Fee	Cost	Fee
Mark V-E	\$ 858,020	\$51,482	\$ 922,930	\$55,376	\$ 64,910	\$ 3,894
Mark V-B Reg.	510,090	30,605	169,380	10,163	(340,710)	(20,442)
Mark V-B 12"	100,110	6,006	97,660	5,860	(2,450)	(146)
Thorium	5,760	345	5,760	345	-0-	-0-
Fab. Equipment	49,600	2,977	45,950	2,757	(3,650)	(220)
Total	<u>\$1,523,580</u>	<u>\$91,415</u>	<u>\$1,241,680</u>	<u>\$74,501</u>	<u>\$(281,900)</u>	<u>\$(16,914)</u>

Although there is a net reduction in Mark V-E production, total costs increase because (a) V-E must assume essentially all indirect costs after February 1965, and (b) to maintain continuity in the canning process requires a certain minimum level of personnel. This involves the absorption of about seven direct people in the V-E canning costs after other V-B work is discontinued.



GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

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Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

~~SECRET~~

J. S. Hopkins

- 2 -

JAN 20 1965

Personnel	P-65-1	P-65-2	Change
<u>Man-Months</u>			
V-E	552	593	41
V-B Reg.	341	111	(230)
V-B 12 ^u	66	55	(11)
Thorium	5	17	12
Equipment	41	46	5
Expense	156	122	(34)
Total	<u>1,161</u>	<u>944</u>	<u>(217)</u>
Ending 9/30/65	<u>89</u>	<u>61</u>	<u>(28)</u>

Overhead Direct Labor Totals and Ratios

	P-65-1	P-65-2	Oct.-Nov. Actual
Direct Labor	\$442,530	\$364,228	\$ 87,858
Overhead	644,720	556,178	113,368
Ratio OH to DL	146.0%	153.0%	129.0%

Based on a declining level of operation we consider the overhead total and ratio to be reasonable. The more variable overhead items reflect appropriate decreases.

Unit Cost	P-65-1	P-65-2
Mark V-B	\$1.19	\$1.35
Mark V-E	1.66	1.98

The unit costs are not considered unreasonable based on the low level of production.

Conclusion

Based on a declining level of production, the estimates are reasonable and we recommend acceptance of the proposal (P-65-2) as submitted.

Contract Finance Information

The revised estimates of cost and fixed fees are as follows. Actual costs are included for October and November.

~~SECRET~~

USDOE 017803

~~SECRET~~

J. S. Hopkins

- 3 -

JAN 20 1965

Activity	P-65-2			P-65-1	Change
	Cost	Fee	Total		
Mark V-E	\$ 922,024	\$58,133a/	\$ 980,157	\$ 912,479	\$ 67,678
Mark V-B Reg.	163,095	10,163	173,258	540,695	(367,437)
Mark V-B 12"	91,113	5,860	96,973	106,116	(9,143)
Thorium	26,808	345	27,153	6,105	21,048b/
Fab. Equipment	50,200	a/	50,200	49,600	600
Purchased Equip.	9,800	-0-	9,800	40,400	(30,600)
Total	<u>\$1,263,040</u>	<u>\$74,501</u>	<u>\$1,337,541</u>	<u>\$1,655,395</u>	<u>\$(317,854)</u>

a/ Includes fee of \$2,757 on fabricated equipment.

b/ A fee was paid on the majority of the thorium work in the contract period ending 9/30/64. The work was delayed because of difficulties beyond the control of Sylcor; consequently, the costs have been incurred in this period for the carryover work. Cost subject to fee is \$5,760.

Obligations

The obligation under the contract is decreased \$(312,854) as follows:

Mark V-B Reg.	\$ (367,437)
Mark V-B 12"	(9,143)
Mark V-E	67,678
Thorium	21,048
Total Operations	<u>\$(287,854)</u>
Equipment	\$ (25,000)
Total	<u>\$(312,854)</u>

Recap of Costs, Fixed Fee and Obligations

	Mod. 39	Increase (Decrease)	Mod. 40
Operating Costs	\$30,510,242	\$(270,940)	\$30,239,302
Plant and Capital Equipment (Beginning July 1, 1963)	291,289	(30,000)	261,289a/
Fixed Fee (Operations)	1,728,996	(16,914)	1,712,082
Total Estimated Cost	<u>\$32,530,527</u>	<u>\$(317,854)</u>	<u>\$32,212,673a/</u>
Commission Obligation	\$32,515,527	\$(312,854)	\$32,202,673
Operation	-	(287,854)	-
Equipment	-	(25,000)	-

a/ Includes \$10,000 first quarter FY 1966 equipment requirements that are not being obligated.

USDOE 017804

~~SECRET~~

J. S. Hopkins

- 4 -

JAN 20 1965

Contract Article Changes

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,500,591, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,712,082. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,263,040, exclusive of the Contractor's fixed fee of \$74,501."

2. In paragraph 2., Obligation of Funds of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$32,515,527" is deleted and the figure "\$32,202,673" is substituted therefor.

3. Subparagraph (f) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE is revised to read:

"(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$74,501."

4. Subparagraph (f) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS is revised to read:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$74,501 shall become due and payable in monthly installments as follows:

October-November 1964	\$6,956
December, 1964 - September, 1965	5,334

cc: J. J. Wise, Manager's Ofc., cy. 2A
R. A. Messick, B&F, cy. 3A
N. J. Donahue, T&P, cy. 4A

~~SECRET~~

USDOE 017805

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 40
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT: Amend scope of work and other provisions of
the Contract.

EFFECTIVE DATE : January 1, 1965

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 39</u>	<u>Increase (Decrease)</u>	<u>Modification No. 40</u>
Operating Cost	\$30,510,242	\$(270,940)	\$30,239,302
Plant and Capital Equipment (Beginning July 1, 1963)	291,289	(30,000)	261,289 a/
Fixed Fee (Operations)	<u>1,728,996</u>	<u>(16,914)</u>	<u>1,712,082</u>
Total Estimated Cost	<u>\$32,530,527</u>	<u>\$(317,854)</u>	<u>\$32,212,673 a/</u>
Commission Obligation	\$32,515,527	\$(312,854)	\$32,202,673
Operation	-	(287,854)	-
Equipment	-	(25,000)	-

a/ Includes \$10,000 first quarter FY 1966 equipment requirements that are not being obligated.

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USDOE 017344

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 40
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 26th day of February, 1965, effective January 1, 1965, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. In Article I - SCOPE OF WORK, paragraph 3. is renumbered paragraph 4., and the following new paragraph 3. is added:
 - "3. Notwithstanding any other provisions of this Article and/or Contract, the Contractor may utilize in Site "A" the area occupied, equipment and personnel of Department No. 21 - Chemical Services, Department No. 23 - Engineering Department, Department No. 24 - Machine Services, Department No. 27 - Plant Engineering (Drafting and Maintenance), and Department No. 29 - Metallography Services, to perform non-nuclear services or work for private commercial interest under the terms and conditions set forth in the letter dated October 23, 1964, from R. C. Blair to W. R. Mandaro, Manufacturing Manager, Sylcor, as accepted and implemented by W. R. Mandaro's letter and attachment thereto dated December 4, 1964, addressed to R. C. Blair, which letters and attachment are incorporated herein by reference, and upon the further condition that the Contractor does hereby release the Government of all responsibility with respect to such work and agrees that it shall indemnify and hold harmless the Government and the Commission from liability of any type arising out of or in the course of the performance of any such work. The conditions set forth in the letters aforesaid may be modified from time to time, in writing, by mutual agreement of the parties, without the necessity of formally amending the Contract."

USDOE 017345

Modification No. 40
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

2. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,500,591, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,712,082. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,263,040, exclusive of the Contractor's fixed fee of \$74,501."

3. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$32,515,527" is deleted and the figure "\$32,202,673" is substituted therefor.
4. Subparagraph (f) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read:

"(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$74,501."

5. Subparagraph (f) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$74,501 shall become due and payable in monthly installments as follows:

October-November 1964	\$6,856
December 1964 - September 1965	5,334

6. Appendix "B" Modification No. 29, as amended, is further amended as of January 1, 1965, and is attached hereto and made a part hereof.
7. All other terms and conditions of the Contract remain unchanged.

Modification No. 40
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, SROO

WITNESSES:

/s/ Grace Golden

Hicksville, N. Y.
(Address)

/s/ Mary G. Steglic

Hicksville, N. Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.

BY: /s/ W. R. Mandaro

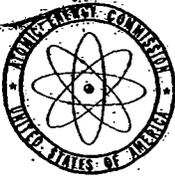
TITLE: Manufacturing Manager
Sylcor Division

I, J. M. Toohar, certify that I am Asst. Secretary of Sylvania Electric Products Inc., named above; that W. R. Mandaro who signed this Agreement on behalf of said corporation, was then Mfg. Mgr. - Sylcor Division of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 15th day of February, 1965.

/s/ J. M. Toohar

(CORPORATE SEAL)



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

Chambers
CB-9R

DC FILE

MAY 17 1965

Mr. John T. Conway
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Conway:

This letter confirms Mr. Maranowski's telephone call to Captain Bauer of your staff advising that the Atomic Energy Commission has authorized the Savannah River Operations Office to terminate its cost-plus-fixed-fee contract with the Sylcor Division, Sylvania Electric Products, Inc., for fuel fabrication operations at the Sylcor-owned plant at Hicksville, New York.

As you know, for a number of years Sylcor has clad a portion of the fuel elements used in the SRP production reactors, of which the most recent have been the inner elements of the V-B and V-E design. Although the performance of Sylcor has been excellent throughout the period of the contract, the shutdown of one SRP reactor in June 1964, and changing program requirements has and will continue to reduce SRP's requirements for the type of fuel elements for which capability now exists at the Hicksville plant. Consolidation of all fuel element manufacturing at SRP will result in significant cost savings and enable R. I. du Pont de Nemours & Co., the operating contractor, to better utilize manpower during periods of fluctuating requirements for the many alternate fuel types used in the production of the various reactor products assigned to SRP, such as tritium, U-233, curium, etc.

Further, du Pont has developed and converted its uranium canning facilities from the hot-press-bonding process to a hot-die-sizing process which offers additional savings and a flexibility to accommodate changes in fuel element design without major changes in equipment. Sylcor's only existing capability is for the hot-press-bonding process; therefore, it would have been necessary to equip Sylcor for the hot-die-sizing process in order to take full advantage of its potential cost savings and operational flexibility. SRP has adequate hot-die-sizing capacity to handle the entire fuel load of outer and inner elements.

DOE - History Division
Sutland materials - AEC
Accession # 326-76-0006
Job 6540
Box 214 USDOE 017916
F MFT-2 Savannah River
(Outback) January -
~~February~~ December 1965



Mr. John T. Conway

- 2 -

The Special Nuclear Materials Program portion of the AEC's FY 1966 budget estimates assumed that the Sylcor operation would be terminated by the end of FY 1965. Therefore, this action does not affect the FY 1966 budget now before the Congress.

There were 64 Sylcor employees engaged in contract operations as of April 30, 1965, as compared to the peak employment of 300 in mid-1960 and employment of 190 in December 1963, just prior to the announced production cutback which resulted in the shutdown of an SRF reactor in June 1964.

Should you wish further information concerning this matter, please let us know.

Sincerely yours,

R. E. Hollingsworth

General Manager

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MATERIALS

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GM (1)
AGMPP (1)
OCR (2)
OGC (1)
SROO (1)

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(Last page rewritten JVVinciguerra:dhk 5/17/65)

PA F:DIRECTOR
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5/14/65
(See conc. on attached
yellow)

OGC/OCR

AGMPP

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GM

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attached
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USDOE 017917

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R 131315Z

FM USAEC WASHDC

TO USAEC N AUG S C

AEC

BT

UNCLAS TO R C BLAIR FM F P BARANOWSKI PD CONFIRMING MY TELCON CMM
THE COMMISSION HAS APPROVED THE TERMINATION OF THE SYLCOR
CONTRACT PD ACCORDINGLY CMM SYLCOR SHOULD BE NOTIFIED IMMEDIATELY
THAT YOU PLAN TO PHASE OUT ALL WORK UNDER THAT CONTRACT AT THE
EARLIEST POSSIBLE DATE PD JCAE AND LOCAL CONGRESSMAN HAVE BEEN
NOTIFIED PD PARA

PLEASE ADVISE THIS OFFICE ASAP OF HOW YOU PLAN TO PHASE OUT
SYLCOR AND SWITCH THE LOAD TO SRP CMM INCLUDING TIME SCHEDULE
CMM FY 1966 COSTS AT SYLCOR AND PROPOSED DISPOSITION OF AEC-OWNED
EQUIPMENT CMM MATERIALS CMM ETC PD PARA

PAGE 2 RUEHRE 004 UNCLAS

IN THIS CONNECTION CMM IT IS SUGGESTED THAT THE LIST OF AEC-OWNED
EQUIPMENT AT SYLOR BE FURNISHED TO RICHLAND FOR CONSIDERATION
OF POSSIBLE USE IN ITS CANNING OPERATIONS PD END REF PAB CLN PBW AEC 412
BT

NNNN

SYLCOR DIVISION
Sylvania Electric Products Inc.
Hicksville, New York

DATE: May 19, 1965

TO: M. Boll
W. Crowley ✓
J. Grano
H. Grieb
G. LaPier
J. McCarthy
W. Nelson
L. Sama

The close-out of the 1293 contract announced today is, as you realize, a major task. We plan to end the production operations prior to the vacation shutdown. The necessary inventories, the decontamination of equipment and areas, and the dismantling, packaging, and shipment of equipment, will take place between the end of production and September 30. Considerable negotiation with the Commission will be necessary before the details of specifically what equipment will be transferred and to what location it will go are determined.

We will be given an opportunity to procure some of this equipment for our own commercial use. I would request that all department heads provide Bill Crowley with lists of equipment that they have an interest in. We must remember that such items are subject to prior claim by the Commission. We cannot promise that we can obtain all of this equipment. Availability, cost, and long range usefulness to Sylcor must be considered.

General direction of the close-out and liaison between SROO and Sylcor will be handled by myself and Mr. James Hopkins, Director of the Administrative Division, SROO. Milton Boll will be my alternate in this capacity. Department heads

SYLCOR DIVISION
Sylvania Electric Products Inc.
Hicksville, New York

List

-2-

May 19, 1965

will be working with representatives of SROO in their area of responsibility, i.e., financial, legal, safety, security, etc. Ed Meyer will have the over-all responsibility for the coordination and direction of the physical phases of the equipment removal and scrap reprocessing.

As negotiations progress we will keep you informed.



W. R. Mandaro

WRM/gg
cc: All Supervisors

Crowley

SYLCOR DIVISION
Sylvania Electric Products Inc.
Hicksville, New York

May 19, 1965

TO: ALL EMPLOYEES

We have been notified today by the Atomic Energy Commission that our contract with the Savannah River Operations Office will not be renewed when it expires on September 30, 1965.

The reason that our contract will not continue is closely tied to the over-all reduction in the government's atomic weapons programs. You will recall announcements made by President Johnson last year. The point has been reached where the product we manufacture is no longer needed in quantities sufficient enough to maintain our operation.

There will be an orderly phase-out of the program at Hicksville. We must complete our present schedule through July 16, 1965. All production will end as of that date. We plan to have our regularly scheduled vacation shutdown in the last two weeks of July. On return from vacation we will proceed to prepare for the return of all government-owned materials, scrap, and equipment. The close out of this contract of over ten years standing will be no little task both in the physical disposal of the property and the administrative details that are necessary. As we see the task before us we feel certain that all employees currently on the payroll will be needed to complete the job.

This close-out of contract 1293 will not have an immediate effect on our commercial operation. When the phase-out is completed, a limited number of salaried people will be absorbed into the commercial plant and our regular seniority policies will prevail for our hourly employees. We plan no layoffs before mid-September.

We regret very much that the Commission was forced to take this action. All employees of this division have been commended by the Commission for the excellent job that has been done through the years on this contract. We are extremely proud of the reputation we at Sylcor have established with the AEC and with other federal agencies. We intend to carry out the remainder of our contract in

-Cont'd-

**SYLCOR DIVISION
Sylvania Electric Products Inc.
Hicksville, N.Y.**

TO ALL EMPLOYEES

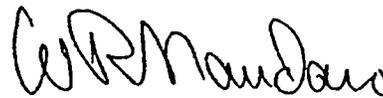
-2-

May 19, 1965

good faith and to the best of our abilities. We are sure that this will stand us in good stead when the opportunity arises for future contract work with any government agency.

I personally want to thank you for the help and cooperation you have given me and the rest of the management at Sylcor through the years. I know that I can count on your continued cooperation. When all of our plans are complete you will be informed and kept informed of as much detail as possible by your supervisors.

WRM/gg


W. R. Mandaro

A

WSRC DECLASSIFICATION REVIEW	
1st Review Date: <u>4/28/04</u>	Determination (Circle Number)
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: <u>R. Collins</u>	2. Classification Changed To:
2nd Review Date: <u>4/28/04</u>	3. Classification Cancelled
Authority: ADD	4. Other:
Name: <u>A. L. H.</u>	

Box 4
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SR-A-153

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED JUNE 1, 1965, UNDER
 MODIFICATION NO. 41

*CG Amd-2
 9/80*

The scope of work to be performed by the Contractor during the period October 1, 1964, through September 30, 1965, as set forth by Modification No. 39 is revised to read as follows:

I. PRODUCTION

A. MARK V-B AND MARK V-E (Inner Fuel)

The Contractor shall manufacture and furnish to be Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	Mark V-B (Tons) <u>Integral Rib</u>	Mark V-E (Tons) <u>Integral Rib</u>
October	21	26
November	18	22
December	15	23
January	10	20
February	-	21
March	-	23
April	-	21
May	-	21
June	-	28
July	-	12
August	-	-
September	-	-

B. EXTENDED LENGTH MARK V-B SLUGS

Undertake the canning of 560 sets of extended length Mark V-B slugs for delivery in accordance with the following schedule:

- 75 sets by October 19, 1964
- 175 sets by December 14, 1964
- 310 sets by February 28, 1965

C. THORIUM

Strip approximately 800 thorium slugs for transshipment to Textron, Inc., by March 31, 1965.

GROUP 1
 EXCLUDED FROM AUTOMATIC
 DOWNGRADING AND DECLASSIFICATION

[Redacted]

SROO Response to
 FOIA (SR) - 04-028

A

WSRC DECLASSIFICATION REVIEW	
1st Review Date: <u>4/28/04</u>	Determination (Circle Number)
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: <u>R. Collins</u>	2. Classification Changed To:
2nd Review Date: <u>4/28/04</u>	<u>3. Classification Cancelled</u>
Authority: ADD	4. Other:
Name: <u>A. Light</u>	

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 No. of copies, Series A.

SR-A-153

APPENDIX "B" TO MODIFICATION NO. 29
 CONTRACT NO. AT(30-1)-1293
 REVISED JUNE 1, 1965, UNDER
 MODIFICATION NO. 41

*CG AML-2
 9/00*

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I. PRODUCTION

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March	-	23
April	-	21
May	-	21
June	-	28
July	-	12
August	-	-
September	-	-

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GROUP 1
 EXCLUDED FROM AUTOMATIC
 DOWNGRADING AND DECLASSIFICATION

[Redacted]

SROO Response to
 FOIA (SR) - 04-028

SYLVANIA

SYLVANIA ELECTRIC PRODUCTS INC. A Subsidiary of GENERAL TELEPHONE & ELECTRONICS CORPORATION

Wells 1-3500
Twa. No. Hkvl 2358



UNCLASSIFIED

Sylcor Division

Cantiague Road
Hicksville, N. Y.

August 19, 1965

When separated from enclosures handle
this document as UNCLASSIFIED

Mr. R. C. Blair, Manager
U.S. Atomic Energy Commission
Savannah River Operations Office
P.O. Box A
Aiken, S.C.

Dear Mr. Blair:

Attached is our submission (P66-1) of the estimate of costs for the work associated with the termination of Contract AT(30-1)-1293 for the period August and September 1965.

I will be at Savannah River on August 20 to discuss the details of this proposal.

Yours very truly,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.

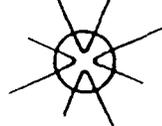
W. R. Mandaro
Manufacturing Manager

WRM/gg
Att:

Document transmitted herewith contains
~~CONFIDENTIAL DATA~~
~~CONFIDENTIAL DATA~~

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~~SECRET~~



NUCLEAR FUEL ELEMENTS

CUSTOM METALLURGY

USDOE 017881

it (30-1)-1293

SYLOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
HICKSVILLE, NEW YORK
CONTRACT AT(30-1)-1293

FUNDING SCHEDULE
P66-1
SCHEDULE 2

UNCLASSIFIED

	<u>B U D G E T</u>		
	<u>AUG</u>	<u>SEPT</u>	
1. NUMBER OF EMPLOYEES			
A. <u>Classification</u>			
Non-exempt	37	32	
Exempt	<u>4</u>	<u>4</u>	
TOTAL	41	36	
B. <u>Program Utilization</u>			
Mark VE	10	--	
AEC Closing Costs	<u>25</u>	<u>30</u>	
TOTAL DIRECT EMPLOYEES	35	30	
TOTAL EXPENSE	<u>6</u>	<u>6</u>	
TOTAL	41	36	
2. <u>COST BREAKDOWN BY ELEMENTS OF COST BY PROGRAMS (00's omitted)</u>			
	<u>MVE</u>	<u>AEC</u>	<u>Total</u>
Direct Labor	<u>5.1</u>	<u>Closing</u>	<u>35.1</u>
Overhead	8.3	31.0	59.3
Direct Charges	2.0	51.0	85.0
G&A	<u>1.7</u>	83.0	<u>18.0</u>
TOTAL COST	17.1	<u>16.3</u>	198.4
		181.3	

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SYLCOR DIVISON
SYLVANIA ELECTRIC PRODUCTS INC.
HICKSVILLE, NEW YORK
CONTRACT AT(30-1)-1293

FUNDING SCHEDULE
P66-1
SCHEDULE 3

Fee Proposal

P66-1 August & September 1965	\$198,360
Less: Reduction of cost applicable to 1,456 pcs. of MVE not shipped against schedule contained in proposal P65-3	(25,480)
	<hr/>
Total Estimated Cost	\$172,880
6% Fee	\$10,373

Aug, 1956	5187
Sept, 1965	<u>5186</u>
Total	10,373

*Unit cost
30-1-1293*

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USDOE 017884

W.G. CROWLEY

CONTRACT 1293

9/3/55

193 Class Dist - after discussion w/ Tom Daly, Ed Brachocki, P. Carroll 9/2.

Value in Place - value of the improvements in their existing condition. This value, since it bears no relationship to salvage, cannot be less than zero.

Salvage Value - The salvage value of improvements less the cost of removal + restore. This can be less than zero.

Agreed value given consideration to appraised value in place and value to Contractor (This can be less than zero) - not less than the appraised salvage value.

Conclusion that working value should not be excluded from the contract definition of improvements if it is in addition to the working necessary to permit repairs. This is - if it is related to the production equipment that was installed. Tom Daly, from his observation, thought this was the case + WRM agreed - was, in fact, pure this was so.

Bruce thought pointed out that it really wouldn't make much difference in the examples.

1. As improvements - The industry agreed value would be what we could recover

as salvage - No profit or loss to contractor

2. As repairs - Inconsistent. AEC would abandon the repairs unless they were profitable. ^{again}

Abandonment - applies only to property. They cannot abandon improvements.

The pits, trenches, holes ^{should} can most certainly be considered improvements. Those requiring resolution with the AEC are ^{to be} mutually agreed value which based on current value will be an expense to restore. Restoration is available to us through the current value to Contractor.

TD179VV EUA963GRA611
PP RUEPNY
DE RUEPXS 048 2592024
ZNR UUUUU
T 516-433-9526
P 162010Z

9
9/17/65

FM R C BLAIR USAEC N AUGUSTA SC
TO W R MANDARO SYLOR DIV SYLVANIA ELECTRIC PRODUCTS INC HICKSVILLE
NY
AEC
BT

UNCLAS EFFECTIVE IMMEDIATELY UPON RECEIPT OF YOUR CONCURRENCE
PARAGRAPH 2 CMM ARTICLE VIII CMM SETTLEMENT OF GOVERNMENT
IMPROVEMENTS CMM OF CONTRACT AT/30-1/-1293 SHALL BE AMENDED TO READ
AS FOLLOWS

"UPON TERMINATION OR EXPIRATION OF THIS AGREEMENT CMM THE APPRAISED
NET SALVAGE VALUE OF THE IMPROVEMENTS SHALL BE DETERMINED BY MUTUAL
AGREEMENT OF THE PARTIES FOLLOWING SEPARATE APPRAISALS TO BE MADE
BY AN APPRAISER TO BE SELECTED BY THE GOVERNMENT AND AN APPRAISER
TO BE SELECTED BY THE CONTRACTOR. PROMPTLY FOLLOWING DETERMINATION
OF THE APPRAISED VALUE IN PLACE AND THE APPRAISED NET SALVAGE VALUE

PAGE 2 RUEPXS 048 UNCLAS

~~CMM THE CONTRACTOR SHALL IN GOOD FAITH FURTHER NEGOTIATE WITH AND PAY
TO THE GOVERNMENT AN AMOUNT EQUAL TO THE MUTUALLY AGREED VALUE OF
SUCH IMPROVEMENTS. THE MUTUALLY AGREED VALUE SHALL BE DETERMINED
AFTER GIVING FULL CONSIDERATION TO THE APPRAISED VALUE IN PLACE
AND THE CURRENT VALUE TO THE CONTRACTOR OF SUCH IMPROVEMENTS. IN
NO EVENT SHALL THE MUTUALLY AGREED VALUE BE LESS THAN THE APPRAISED
NET SALVAGE VALUE OF THE IMPROVEMENTS. FAILURE TO AGREE UPON EITHER
THE APPRAISED VALUED VALUE IN PLACE CMM THE APPRAISED NET SALVAGE CMM
OR CMM THE MUTUALLY AGREED VALUE PURSUANT TO THE FOREGOING PROVISIONS
OF THIS ARTICLE SHALL BE CONSIDERED A DISPUTE TO BE SETTLED IN
ACCORDANCE WITH THE GENERAL PROVISIONS OF THIS CONTRACT ENTITLED
DISPUTES." REF C-AMC~~

BT

NNNN
SYLOR HICVL

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UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *A. Y. Morgan*
A. Y. Morgan, Director
Budget and Finance Division

DATE: SEP 20 1965

Document No. SR-FB-1180

This document consists of 4 pages

SUBJECT: REVISED SYLCOR PROPOSALS P-65-3 AND P-66-2

No. 1 of 7 copies. Series A

FB:MER:ebk

We have reviewed Sylcor's revised proposals for the period ending September 30, 1965 and submit the following for your consideration in modifying the contract.

I. Scope Changes

The changes that warrant a revision in the fee base are:

- (a) Reduction in Mark V-E production -
August and September 1965 82,000 lbs.
- (b) Reduction in Mark V-E production - July 1965 13,500 lbs.
- (c) Underrun in fabricated equipment
- (d) Close-out costs equipment dismantling,
decontamination, etc.

With the above scope changes we have derived the following fee base, all items being based on estimated costs.

	P-65-2	P-65-3	P-66-2	Total	Current	Change
	10-1-64	5-1-65	8-1-65	Revised	P-65-2	+ or (-)
	4-30-65	7-31-65	9-30-65	Fee Base		
Mark V-B Reg.	\$169,380	\$ -0-	\$ -0-	\$ 169,380	\$ 169,380	\$ -0-
Mark V-B 12"	97,660	-0-	-0-	97,660	97,660	-0-
Mark V-E	523,650	201,100	-0-	724,750	922,930	(198,180)
Thorium	5,760	-0-	-0-	5,760	5,760	-0-
Fab. Equip.	29,060	2,400	-0-	31,460	45,950	(14,490)
Termination	-0-	46,890	182,820	229,710		229,710
Subcontract for Decontamination	-0-	-0-	(58,400) ^{b/}	(58,400) ^{b/}	-0-	(58,400)
V-E Underrun - July	-0-	(25,480) ^{a/}	-0-	(25,480) ^{a/}	-0-	(25,480)
Total	<u>\$825,510</u>	<u>\$224,910</u>	<u>\$124,420</u>	<u>\$1,174,840</u>	<u>\$1,241,680</u>	<u>\$(66,840)</u>
Fee @ 6%				<u>\$ 70,490</u>	<u>\$ 74,501</u>	<u>\$(4,011)</u>

a/ This represents Sylcor's estimate of the cost of producing 1,456 V-E Slugs or about 13,500 pounds which were scheduled to be produced in July 1965 in P-65-3, but were not produced.

b/ This represents the estimated subcontract costs for decontamination which are not expected to be incurred in the contract period ending September 30, 1965.

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EXCLUDED FROM AUTO-
DATE DOWNGRADING
AND DECLASSIFICATION

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Savings Bonds Regularly on the Payroll Savings Plan

~~SECRET~~

J. S. Hopkins

- 2 -

SEP 20 1965

Actual cost and production is compared with the estimates in the following table.

	Estimates 10/1/65 - 9/30/65	Actual 10/1/64 thru 7/3/65	Variation
<u>Production</u>			
Mark V-E lbs.	421,074 ^{c/}	422,446	1,372
Mark V-B Reg. lbs.	128,000	126,995	(1,005)
Mark V-B 12" sets	560	653	
Thorium ^{d/}	-	-	
<u>Costs</u>			
Mark V-E	699,270	781,084	81,814
Mark V-B 8"	169,380	222,465 ^{e/}	53,085
Mark V-B 12"	97,660	85,004	(12,656)
Thorium	5,760	28,496	22,736
Equip. fab.	31,460	43,115	11,655
Termination	<u>171,310</u>	<u>37,897</u>	<u>(133,413)</u>
Total Costs	<u>1,174,840</u>	<u>1,198,061</u>	<u>23,221</u>

^{c/} 96,000 lbs P-65-1 Oct-Nov 1964; 216,000 lbs Dec-April P-65-2; 122,574 lbs P-65-3; (13,500) lbs P-66-2

^{d/} Basically completed prior to this contract period for fee purposes

^{e/} Includes 47,523 costs of write-off of Inv. & Alcoa cancellation

Conclusion

Sylcor has basically performed their production requirements as established in the contract. A fee of \$70,490 should be negotiated for the year ending September 30, 1965. The \$58,400 included in their proposal P-66-2 of September 8, 1965 for decontamination should be deleted from this proposal. An amount of \$25,480 should be deleted from their proposal P-65-3 of June 1, 1965 for not completing about 13,500 lbs. of Mark V-E elements.

A new contract will be negotiated to cover termination costs beyond September 30, 1965, with fee being paid to assure a competent job of decontamination by a subcontractor.

Contract Finance Information

<u>Obligations</u>	<u>Operations</u>	<u>Equipment</u>	<u>Total</u>
Unpaid Obligations 6/30/65	\$ 512,226	-0-	\$ 512,226

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USDOE 017795

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J. S. Hopkins

- 3 -

SEP 20 1965

Contract Finance Information (cont'd)

<u>Requirements</u>	<u>Operations</u>	<u>Equipment</u>	<u>Total</u>
Working Capital 6/30/65 (negative)	\$ 9,155	-0-	\$ 9,155
Costs - July Actual	54,811		54,811
Costs - August and September - P-66-2	131,884	-0-	131,884
Fee Withheld (Est.)	10,985	-0-	10,985
Commitments 9/30/65 (Est.)	100,000	-0-	100,000
Total Requirements	\$ 306,835	-0-	\$ 306,835

Deobligate This Modification	<u>\$(205,391)</u>	<u>\$(205,391)</u>
Equipment		\$(2,516)
Operations & Fee		\$(202,875)

The Revised Estimated Cost is as Follows

<u>Activity</u>	<u>P-66-2</u>			<u>Inc. Fee P-65-2</u>	<u>Change</u>
	<u>Cost</u>	<u>Fee</u>	<u>Total</u>		
Mark V-E	\$ 739,128	\$41,956	\$ 781,084	\$ 980,157	\$(199,073)
Mark V-B Reg.	212,302	10,163	222,465	173,258	49,207
Mark V-B 12"	79,144	5,860	85,004	96,973	(11,969)
Thorium	28,151	345	28,496	27,153	1,343
Fab. Equip.	41,228	1,887	43,115	50,200	(7,085)
Purchased Equip.	9,038	-0-	9,038	9,800	(762)
Termination	152,038	10,279	162,317	-0-	162,317
Total	<u>\$1,261,029</u>	<u>\$70,490</u>	<u>\$1,331,519</u>	<u>\$1,337,541</u>	<u>\$(6,022)</u>

Recap of Costs & Fixed Fee and Obligations

	<u>Mod. 40</u>	<u>Increase (Decrease)</u>	<u>Mod. 41</u>
	Operating Costs	\$30,239,302	\$(198,864)
Plant and Capital Equip. (Beginning July 1, 1965)	261,289	(12,516)	248,773
Fixed Fee (Operations)	1,712,082	(4,011)	1,708,071
Total Estimated Cost	<u>\$32,212,673</u> a/	<u>\$(215,391)</u>	<u>\$31,997,282</u>
Commission Obligation	\$32,202,673	\$(205,391)	\$31,997,282
Operation & Fee	-	1,825	
Equipment	-	(2,516)	
Commitments Operating	-	(204,700)	

a/ Included 10,000 Equipment First Quarter FY 1966 Not Obligated

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USDOE 017796

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J. S. Hopkins

- 4 -

SEP 10 1965

Contract Article Changes

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,289,211, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,708,071. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,174,840, exclusive of the Contractor's fixed fee of \$70,490." *1,241,027 (change by Telecom w/Robinson 10/27/65)*

2. In paragraph 2., Obligation of Funds of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$32,202,673" is deleted and the figure "\$31,997,282" is substituted therefor.

3. Subparagraph (f) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE is revised to read:

"(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$70,490."

4. Subparagraph (f) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS is revised to read:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$70,490 shall become due and payable in monthly installments as follows:

October-November 1964	\$6,856
December, 1964 - July, 1965	5,334
August-September, 1965	3,528

- cc: J. J. Wise, Manager's Office, cy. 2A
 R. A. Messick, B&F, cy. 3A
 N. J. Donahue, T&P, cy. 4A

~~SECRET~~

USDOE 017797

W. C. Blair

September 23, 1965

Mr. R. C. Blair, Manager
U.S. Atomic Energy Commission
Savannah River Operations Office
P.O. Box A
Aiken, S.C.

Dear Mr. Blair:

Enclosed is our proposal for extension of the contract work beyond September 30, 1965 for purposes of finalization of closeout expenses. We cannot submit this proposal on a fixed price basis as requested by Messrs. Hopkins and Donahue during their recent visit. We do not have firm figures on the decontamination service and feel that any labor required in the cleanout should be on a CPFF basis.

In considering the time involved in the cleanout and decontamination along with the continuing administrative requirements, we propose the following contractual arrangement.

1. Terminate Contract 1293 as of September 30, 1965 for closure of integrated books and records.
2. Initiate a new CPFF contract effective October 1, 1965 for the cleanout and administrative expenses involved in the closeout.
3. Decontamination service, travel, and Syloor labor involved in the physical cleanout will be charged on an actual cost basis.
4. Administrative expense be fixed at \$17,570 disregarding time involved in this closeout. This amount was calculated

SYL00051794

Mr. Blair

-2-

9/23/65

based on estimated percentage of time of accounting and management personnel involved in closeout of the integrated contract books, audit and settlement of improvements and other contractual matters.

The total cost of this closeout is estimated at \$75,940 plus \$3,800 of fixed fee. The largest item involved is the decontamination service estimated at \$50,000.

If this proposal meets with your approval we would appreciate your preparing a contract document prior to October 1, 1965.

Very truly yours,

SYLOR DIVISION
PENNSYLVANIA ELECTRIC PRODUCTS INC.

WRM/EE
Enc.

cc: W Crowley
G Gannon

W. R. Mandaro
Manufacturing Manager

SYL00051795

To Blair
AEC SROO

Enclosed is our proposal for extension of the contract work beyond September 30, 1965 for purposes of finalization of closeout expenses. We cannot submit this proposal on a fixed price basis as requested by Maxine Hopkins and Donohue during their recent visit. We do not have firm figures on the decontamination service and feel that any labor required in the clean out should be on a CPFF basis.

In considering the time involved in the clean-out and decontamination along with the continuing administrative requirements we propose the following contractual arrangement.

1. Terminate Contract 1293 as of September 30, 1965 for closure of integrated books and records.
2. Initiate a new CPFF Contract effective October 1, 1965 for the clean out and administrative expenses involved in the close out
3. Decontamination service, travel, and Sylcor labor involved in the physical clean out will be charged on an actual cost basis.

4. Administrative expense be fixed at \$17,570 disregarding time involved in this closeout. This amount was calculated based on ^{estimated} percentage of time of accounting and management personnel involved in closeout of ^{the} integrated contract books, audit and settlement of improvements and other contractual matters.

The total cost of this closeout is estimated at \$75,940 plus \$3,800 of fixed fee. The largest item involved is the decontamination service estimated at \$50,000.

If this proposal meets with your approval we would appreciate you preparing a contract document prior to October 1, 1965.

Very truly yours
WRM

SYLOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.
HICKSVILLE, NEW YORK

CONTRACT 1293 TERMINATION

I. Termination Cost Proposal - Due 6/30/65

- A. Decontamination of all necessary equipment, grounds and buildings.
H. Grieb making survey on equipment - production machining, burning building, pump house, sumps, etc. Due Date 6/25/65.
- B. Equipment and materials to be moved to SROO and other A E C locations - includes rigging, crating and shipping expense.
Eh. Meyer by 6/18/65.
- C. Packaging and shipment in drums of all contaminated materials and equipment for burial. H. Grieb by 6/25/65.
- D. Removal of piping and equipment affixed to buildings and replace buildings to acceptable condition. Eh. Meyer by 6/25/65.

II. Close-out Negotiations

- A. Settlement of improvements to buildings at fair value.
- B. Negotiate with A E C for purchase of materials and equipment we want.

SYL 000504

SYLOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Contract Closeout
 Proposal-CPEE Basis

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANUP				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,050	--	3,300
Payroll Cost (20% of Labor)	450	210	--	660
Heat & Light (Fixed Am't per Mo.)	800	800	--	1,600
Misc Materials (Actual Purchases)	300	200	--	500
TOTAL	3,800	2,260	--	6,060
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	950	950	3,050
Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
Payroll Cost @ 20%	1,000	660	660	2,320
Occupancy @ 6%	300	200	200	700
Other Office Exp. @ 8%	400	270	250	930
Legal Expense	2,000	--	--	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	860	50	1,110
TOTAL	13,300	58,160	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

SYL 000508

CONTRACT 1293 CLOSEOUT ESTIMATE

PERCENTAGE OF TIME
OCT NOV DEC

DIRECT WORK

M. POLOWICZ

100 50 -

A. PETRUCCI

100 50 -

2 COMM MEN

100 50 -

\$ 2254 \$ 1073 \$ 3327

ACCOUNTING

W. CROWLEY

40 40 40

A. GANNON

100 100 50 50

R. BANGS

90 50 50

W. HAVENOR

35 10 10

R. PHILLIPS

10 5 5

C. DALY

5 5 5

T. ALEXA

5 5 5

R. RAFFERY

5 5 5

\$ 1458 \$ 1123 \$ 1123 \$ 4184

MANAGEMENT

W. MANDARO

40 25 40 40

G. GOLDEN

30 15 15

M. BOLL

40 40 40

G. STIGLIC

30 15 15

\$ 1119 \$ 950 \$ 950 \$ 3049

HEALTH, SAFETY, SECURITY

H. GRIEB

75 75 75

H. FELTMAN

100 50 50

R. MULLEN

100 50 50

\$ 1906 \$ 1240 \$ 1240 \$ 4386

SYL 000509

DATA USED AS BASIS FOR AEC PROPOSAL

PERIOD JAN - AUG 1965

DIV G+A DIV SERVICE

SALARIES	7 90.9	31.3	
TELEPHONE	7.6	1.2	
OFFICE SUPPLY	1.0	.1	
OPER. SUPPLY	.3	.5	
RENT OF EQUIP	.1	.1	
DEPRECIATION	.7	.3	
DUES & TUITION	.5	.5	
OFFICE MAINT	.1	-	
TOTAL	7 7.0	2.7	
% OF SALARY	7.7%	8.6%	→ USE <u>8%</u>

OCCUPANCY	7 5.9	6.0	
% OF SALARY	6.5%	19.2%	→ USE <u>6%</u>

ACCOUNTING DEPT OCCUPANCY	JAN-JUNE '65	\$ 1840
" " SALARIES	" " "	29,800
	% =	6.2%

<u>HEAT & LIGHT BLDGS 1+2</u>	<u>BLDG 1</u>	<u>BLDG 2</u>	<u>TOTAL</u>	<u>AVE mo</u>
HEAT JAN-AUG '65	5770	1808	7278	910
LIGHT JAN-AUG '65	5312	6710	12,022	1503

FOR PURPOSE OF CLOSEOUT ASSUME 1/3 OF AVERAGE MONTH HEAT 300 LIGHT 500

SYL 000510

CONTRACT 1293 CLOSEOUT

1. AEC PAYROLL TO BE ELIMINATED AT 9-30-65.

CALCULATE ACCURATE ENDING ACCRUAL - ADJUST CAMILLUS
ACCRUAL TO REFLECT THIS ACCURATE ACCRUAL. CHARGE
DIFFERENCE TO COMMERCIAL WHICH WILL BE ADJUSTED ON
THE OCTOBER REVERSAL, AL GANNON TO BE CHARGED TO
DEPT 80.

2. STARTING OCT 1. ALL WORK IN CONNECTION WITH AEC
CLOSEOUT DONE BY COMMERCIAL PEOPLE WILL BE CHARGED
TO AEC AT ACTUAL HOURLY RATES PLUS 22% PAYROLL
COST PLUS A FACTOR FOR SOME (?) OVERHEAD.

3. PREPARE PROPOSAL FOR AEC FOR CLOSEOUT STARTING OCT 1
FOR 90 DAYS. ESTIMATE DIRECT HOURS REQUIRED PLUS
PERCENTAGE OF TIME FOR EXPENSE EMPLOYEES - MONTHLY BASIS
W.R.M. - G. GOLDEN - M.B. - A.G. - J. STICLIC - ^{R. MULLEN} ACCTG DEPT. - GRIER - ~~WINTER~~
OTHER CHARGES - DECONTAMINATION - APPRAISAL - CLEAN UP (OUTSIDE)
HEAT - POWER & LIGHT - PORTER - HOME OFFICE G+A - LEGAL EXP.

SYL 000511

SYLOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Contract Closeout
 Proposal-CPPF Basis

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANOUT				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,050	--	3,300
Payroll Cost (20% of Labor)	450	210	--	660
Heat & Light (Fixed Am't per Mo.)	800	800	--	1,600
Misc Materials (Actual Purchases)	300	200	--	500
TOTAL	3,800	2,260	--	6,060
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	950	950	3,050
4 men <i>Dust</i> Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
Payroll Cost @ 20%	1,000	660	660	2,320
Occupancy @ 6%	300	200	200	700
Other Office Exp. @ 8%	400	270	260	930
Legal Expense	2,000	--	--	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
<i>Appraisal</i>	600	50,600	--	51,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	860	50	1,110
TOTAL	13,300	58,160	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

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SYL 000512

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SYL 000513

SYLOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Contract Closeout
 Proposal-CPFF Basis

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANOUT				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,050	--	3,300
Payroll Cost (20% of Labor)	450	210	--	660
Heat & Light (Fixed Am't per Mo.)	800	800	--	1,600
Misc Materials (Actual Purchases)	300	200	--	500
TOTAL	3,800	2,260	--	6,060
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	950	950	3,050
Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
Payroll Cost @ 20%	1,000	660	660	2,320
Occupancy @ 6%	300	200	200	700
Other Office Exp. @ 8%	400	270	260	930
Legal Expense	2,000	--	--	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,140	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	360	50	1,110
TOTAL	13,300	58,160	4,480	75,940
FIXED FEE	670	2,310	220	3,800
TOTAL CONTRACT	13,970	61,370	4,700	79,740

SYL 000514

SYLOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Contract Closeout
 Proposal-JFFP Basis

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANOUT				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,050	--	3,300
Payroll Cost (20% of Labor)	450	210	--	660
Heat & Light (Fixed Am't per Mo.)	800	800	--	1,600
Misc Materials (Actual Purchases)	300	200	--	500
TOTAL	3,800	2,260	--	6,060
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	950	950	3,050
Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
Payroll Cost @ 20%	1,000	660	660	2,320
Occupancy @ 6%	300	200	200	700
Other Office Exp. @ 8%	400	270	260	930
Legal Expense	2,000	--	--	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	850	50	1,110
TOTAL	13,300	58,150	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

SYL 000515

SYLOR DIVISION
 PENNSYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract #A(50-17-1283

	1954	1955	1956	1957
1. BUILDINGS & AREA CLEANING				
<u>Actual Expense Basis</u>				
Basic Office Overhead	1,000	1,000	1,000	1,000
Payroll Cost (50% of Total)	1,000	1,000	1,000	1,000
Heat & Light (Fixed unit vol.)	1,000	1,000	1,000	1,000
Misc Materials (Actual Unit Cost)	1,000	1,000	1,000	1,000
TOTAL	4,000	4,000	4,000	4,000
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Administration	1,000	1,000	1,000	1,000
Management	1,000	1,000	1,000	1,000
Health, Welfare, Security	1,000	1,000	1,000	1,000
TOTAL	3,000	3,000	3,000	3,000
Payroll Cost @ 50%	1,000	1,000	1,000	1,000
Occupancy @ 8%	300	300	300	700
Other Office Exp. @ 8%	400	270	200	930
Legal Expense	2,000	---	---	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	850	50	1,110
TOTAL	13,300	58,150	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

SYL 000516

SYLCOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Contract Closeout
 Proposal-CFRF Basis

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANOUT				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,000	---	3,300
Payroll Cost (20% of Labor)	450	200	---	650
Heat & Light (Fixed Am't per Mo.)	800	800	---	1,600
Misc Materials (Actual Purchases)	300	200	---	500
TOTAL	3,800	2,200	---	6,000
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	950	950	3,050
Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
Payroll Cost @ 20%	1,000	660	660	2,320
Occupancy @ 6%	300	200	200	700
Other Office Exp. @ 8%	400	270	250	930
Legal Expense	2,000	---	---	2,000
TOTAL FIXED ADMIN EXPENSE	3,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	---	50,000	---	50,000
Travel	600	600	---	1,200
TOTAL	600	50,600	---	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	860	50	1,110
TOTAL	13,300	58,160	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

SYL 000517

SYLOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Estimated Expenses
 Proposed - 1951 Basis:

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANOUT				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,300	--	3,550
Payroll Cost (20% of Labor)	450	260	--	710
Heat & Light (Fixed Am't per Mo.)	300	300	--	1,600
Misc Materials (Actual Purchases)	300	200	--	500
TOTAL	3,800	2,260	--	6,060
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	850	850	3,050
Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,210	3,210	11,620
Payroll Cost @ 20%	1,000	640	640	2,320
Occupancy @ 5%	300	200	200	700
Other Office Exp. @ 5%	400	270	270	930
Legal Expense	2,000	--	--	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	860	50	1,110
TOTAL	13,300	58,160	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

SYL 000518

Sharp

SYLCOB DIVISION
PENNSYLVANIA ELECTRIC PRODUCTS INC.
 Hicksville, New York
 Contract AT(30-1)-1293

Contract Closeout
 Proposal-CPFF Basis

	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
1. BUILDINGS & AREA CLEANOUT				
<u>Actual Expense Basis</u>				
Labor (Time Cards)	2,250	1,050	--	3,300
Payroll Cost (20% of Labor)	450	210	--	660
Heat & Light (Fixed Am't per Mo.)	800	800	--	1,600
Misc Materials (Actual Purchases)	300	200	--	500
TOTAL	3,800	2,260	--	6,060
2. ADMINISTRATIVE EXPENSE				
<u>Fixed Monthly Basis</u>				
Labor - Accounting	1,940	1,120	1,120	4,180
Management	1,150	950	950	3,050
Health, Safety, Security	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
Payroll Cost @ 20%	1,000	660	660	2,320
Occupancy @ 6%	300	200	200	700
Other Office Exp. @ 8%	400	270	260	930
Legal Expense	2,000	--	--	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,430	17,570
3. OTHER EXPENSES				
<u>Actual Expense Basis</u>				
Decontamination Service	--	50,000	--	50,000
Travel	600	600	--	1,200
TOTAL	600	50,600	--	51,200
TOTAL COST	13,100	57,300	4,430	74,830
Home Office G&A @ 1.5%	200	860	50	1,110
TOTAL	13,300	58,160	4,480	75,940
FIXED FEE	670	2,910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

9/23/65

SYL 000519

FUNDING SCHEDULE
P66-3

EST COST OCT 64 - JULY 65 P65-3	1,075,900
LESS: REDUCTION OF COST P65-3	(25,780)
P66-1 EST. COST AUG '65	87,800
P66-2 EST. COST SEPT '65	98,020
LESS: DECONTAMINATION NOT TO BE PAID IN SEPT	(58,700)

TOTAL EST COST OCT '64 - SEPT '65 1,177,840

6% FEE 70,790

OCT. 64 - JULY '65	67,554
AUG + SEPT '65	5,936
	70,790

100%		90%			
7618	Oct - Nov	6856	OCT	7618	
5927	Dec 64 - July 65	5334	Nov	7618	
3920	Aug - Sept	3528	Dec	5927	
			Jan	5927	
			Feb	5927	
			Mar	5927	
			Apr	5927	
			May	5927	
			June	5926	
			July	5926	
			Aug	3920	
			Sept	3920	
				70490	

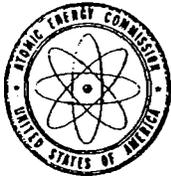
SYLOR DIVISION
 SYLVANIA ELECTRIC PRODUCTS INC.
 HICKSVILLE, NEW YORK
 CONTRACT AT(30-1)-1293

CONTRACT CLOSEOUT
 PROPOSAL-COFF BASIS

	OCT.	NOV.	DEC.	TOTAL
1. BUILDINGS * AREA CLEANOUT				
ACTUAL EXPENSE BASIS				
LABOR (TIME CARDS)	2250	1050	-	3,300
PAYROLL COST (20% OF LABOR)	450	210	-	660
HEAT & LIGHT (FIXED AMT PER Mo)	800	800	-	1,600
MISC MATERIALS (ACTUAL PURCHASE)	300	200	-	500
TOTAL	3800	2260	-	6,060
2. ADMINISTRATIVE EXPENSE				
FIXED MONTHLY BASIS				
LABOR - ACCOUNTING	1,940	1,120	1,120	4,180
MANAGEMENT	1,150	950	950	3,050
HEALTH, SAFETY, SECURITY	1,910	1,240	1,240	4,390
TOTAL LABOR	5,000	3,310	3,310	11,620
PAYROLL COST @ 20%	1,000	660	660	2,320
OCCUPANCY @ 6%	300	200	200	700
OTHER OFFICE EXP. @ 8%	400	270	260	930
LEGAL EXPENSE	2,000	-	-	2,000
TOTAL FIXED ADMIN EXPENSE	8,700	4,440	4,130	17,570
3. OTHER EXPENSES				
ACTUAL EXPENSE BASIS				
DECONTAMINATION SERVICE	-	50,000	-	50,000
TRAVEL	600	600	-	1,200
TOTAL	600	50,600	-	51,200
TOTAL COST	13,100	57,300	4430	74,830
HOME OFFICE G & A @ 1.5%	200	860	50	1,110
TOTAL	13,300	58,160	4480	75,940
FIXED FEE	670	2910	220	3,800
TOTAL CONTRACT	13,970	61,070	4,700	79,740

ALLOCATION

	<u>Total</u>	<u>AEC</u>	<u>Comm</u>
June	19,460	6,134	13,326
July	14,228	4,208	10,020
Aug	19,777	5,201	14,576
Sept	15,570	3,043	12,527



UNITED STATES
ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE
P. O. BOX A
AIKEN, SOUTH CAROLINA 29802

TEL: 404-724-6311
TWX: 803-631-0000
WU: AUGUSTA, GA.

October 1, 1965

Mr. W. R. Mandaro
Manufacturing Manager
Sylcor Division
Sylvania Electric Products, Inc.
Cantiague Road
Hicksville, New York 11802

Dear Mr. Mandaro:

By its terms, Contract AT(30-1)-1293 expired September 30, 1965. Paragraph 3, Expiration, of Article III, TERM EXPIRATION AND TERMINATION, of said Contract provides in the event of expiration that the Contractor shall - (ii) take such other action as may be required under other provisions of this Agreement and subject to the approval or ratification of the Commission, as may be otherwise appropriate, including but not limited to action for the protection and preservation of Government property.

Agreement is requested that, under the provisions of Paragraph 3, the following work is otherwise appropriate: (1) Decontamination of property and work area, (2) shipment of Government property, and (3) performance of accounting work as may be requested.

Upon receipt of your agreement as requested that above work is appropriate, approval is hereby given for you to proceed with said work.

Payment for such work will be governed by special terms and conditions to be mutually agreed to by the parties in early negotiations.

Failure to agree upon such terms and conditions will be handled as a dispute under Article XXI, GENERAL PROVISIONS, of the Contract.

Sincerely yours,

R. C. Blair
Manager



NOV 13 1965

UNITED STATES
ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE
P. O. BOX A
AIKEN, SOUTH CAROLINA 29802
(TEL. & TEL. NORTH AUGUSTA, S. C.)

NOV 12 1965

Mr. W. R. Mandaro
Manufacturing Manager
Sylcor Division
Sylvania Electric Products Inc.
Cantiague Road
Hicksville, New York 11802

Dear Mr. Mandaro:

Enclosed are five draft copies of proposed Modification No. 42 to Contract AT(30-1)-1293.

This proposed modification covers the scope of work to be performed during the 120-day period following the September 30, 1965, expiration date of the contract which was the subject of negotiations between members of our respective staffs on October 6, 1965.

Your attention is invited to item 2.(a) of the modification relating to the repair of damages caused to your property by the removal of Government-owned property. You will note that the amount of compensation has not been stated. This will be agreed upon when members of my staff meet with you next week to negotiate other matters.

These copies of the modification are being forwarded for your review prior to the meeting. If agreement is reached upon the amount of compensation for repair of damages, and the agreement is otherwise acceptable, please execute and return four copies of the modification to this office. Two fully executed copies of the modification will be returned to you together with the number of conformed copies you may require.

Sincerely yours,

R. C. Blair
Manager

Enclosures:
As stated

D R A F T 11/22/65-gg

Mr. J. Wise

Re: Contract AT(30-1)-1293 - Termination

Dear Mr. Wise:

Pursuant to the termination of the aforesaid Contract by the United States Atomic Energy Commission and to the provision of Article VIII, as amended, entitled "Settlement of Government Investment in Improvements," a meeting was held at our Hicksville site on November 17, 1965 to determine a mutually agreed upon value of certain government improvements at said Hicksville location. The meeting was attended by you and certain of your associates, as well as various representatives of Sylvania. After extended discussions, it was agreed that Sylvania would make a settlement offer, as described below. Both you and your associates were in agreement therewith.

As background for the subject offer, it was important to recite certain considerations bearing thereon and which we discussed as a result of the aforesaid Contract provision re "Initial Improvements."

In accordance with the ^{subject} Contract provision, a mutually agreed upon net salvage value for the subject improvements was concluded in an amount of \$1,700. This took into consideration the respective appraisals of the parties, wherein your quoted net salvage value was \$3,400 and our quoted net salvage value was zero. The zero figure quoted by the Company does not take into consideration the fact that the cost of removal of said improvements and related restoration far exceeds the value of said improvements. This, however, was called to your attention.

Thereafter, the parties attempted to agree upon an appraised value in place for the subject improvements, based, in part, on the

respective appraisals which had been obtained. The figure you quoted was \$36,000, whereas our appraised value in place ranged from zero to \$64,400.25, depending on the usage of the building, or the likelihood thereof. Our appraiser noted that the subject building may well have already reached a state of economic and functional obsolescence, which would make the likelihood of resale remote and thus result in the value of improvements being zero. As indicated in our discussions, we do not intend to use the subject building, but rather intend to sell it and thus the salability thereof has a direct effect on the value of these improvements. The subject appraiser, as well as other realtors has indicated that the sale of the subject building is remote, but that the land on which these improvements are located does have marketability. and a prospective purchaser undoubtedly would demolish the subject buildings. In this instance, of course, the value of these improvements would be zero and that was the basis of our initial offer.

In view of our wide ^{Dispositions} ~~diversions~~ for an amount applicable to appraised value in place for the subject improvements and the interest in settling the subject problem without awaiting the final disposition of these improvements, we agreed to officially make the following offer to you:

1. Sylvania will pay to the AEC in full settlement for the subject improvements, pursuant to the aforesaid Contract provision, the sum of \$10,000.

2. In addition to the aforementioned, Sylvania will withdraw its claim for reimbursement for cost of damage incurred in the removal

of government owned equipment from the plant said claim being in the amount of \$ 3,852. . It will also relieve the AEC from any further obligation for repairs, restoration and/or damages re the contractor's property. This release shall not include or affect the sum which the AEC has already agreed to pay the contractor for the decontamination of the subject property.

The aforesaid offer reflects our discussions at the above mentioned meeting and is made without prejudice to the Company's position on its interpretation of the subject Contract provisions or the appraised value in place. It is offered, subject to final agreement on contract language, in the interest of obtaining an equitable and expeditious settlement of the problem. If this offer is not accepted within thirty (30) days it shall be considered withdrawn.

We would appreciate your prompt consideration of this settlement offer.

Very truly yours,

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 41
Supplemental Agreement to
Contract AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

CONTRACTOR : Sylvania Electric Products Inc.
Hicksville, Long Island, New York

SUPPLEMENTAL AGREEMENT: Amend scope of work and other provisions of
the Contract.

EFFECTIVE DATE : June 1, 1965

RECAPITULATION OF REVISED COSTS AND COMMISSION OBLIGATION

	<u>Modification No. 40.</u>	<u>Increase (Decrease)</u>	<u>Modification No. 41</u>
Operating Costs	\$ 30,239,302	\$(198,864)	\$ 30,040,438
Plant and Capital Equipment (Beginning July 1, 1965)	261,289	(12,516)	248,773
Fixed Fee (Operations)	<u>1,712,082</u>	<u>(4,011)</u>	<u>1,708,071</u>
Total Estimated Cost	<u>\$ 32,212,673 a/</u>	<u>\$(215,391)</u>	<u>\$ 31,997,282</u>
Commission Obligation	\$ 32,202,673	\$(205,391)	\$ 31,997,282
Operation & Fee	--	1,825	
Equipment	--	(2,516)	
Commitments Operating	--	(204,700)	

a/ Included \$10,000 equipment first quarter FY 1966 not obligated.

~~SECRET~~

document contains
~~RESTRICTED DATA~~
~~PLANNING DATA~~

When separated from this document handle
this document as UNCLASSIFIED

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 41
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 29th day of November, 1965, effective June 1, 1965, unless otherwise hereinafter specifically provided, by and between the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and the parties desire to further amend said Contract to revise the scope of work and to amend certain other provisions of the Contract as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended;

NOW, THEREFORE, the parties do mutually agree as follows:

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised to read as follows:
 - "1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,289,211, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2. of Article V of the Contract is \$1,708,071. The estimated cost of the work as described in paragraph 1 of the article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,261,029, exclusive of the Contractor's fixed fee of \$70,490."
2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, the figure "\$32,202,673" is deleted and the figure "\$31,997,282" is substituted therefor.
3. Subparagraph (f) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read:
 - "(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$70,490."

CONFORMED COPY

USDOE 017351

Modification No. 41
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

4. Subparagraph (f) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$70,490 shall become due and payable in monthly installments as follows:

October-November 1964	\$6,856
December 1964 -- July 1965	5,334
August-September 1965	3,528

5. Appendix "B," Modification No. 29, as amended, is further amended as of June 1, 1965, and is attached hereto and made a part hereof.
6. All other terms and conditions of the Contract remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ H. L. Kilburn

TITLE: Deputy Manager, SROO

SYLVANIA ELECTRIC PRODUCTS, INC.

BY: /s/ W. R. Mandaro

TITLE: Manufacturing Manager

WITNESSES:

/s/ Mary G. Steglie

Hicksville, New York
(Address)

/s/ M. Boll

Hicksville, New York
(Address)

Modification No. 41
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

I, J. M. Toohar, certify that I am Asst. Secretary
of Sylvania Electric Products Inc. named above; that W. R. Mandaro
who signed this Agreement on behalf of said corporation, was then Mfg.
Manager of said corporation, and that this Agreement
was duly signed for and in behalf of said corporation by authority of its govern-
ing body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 17th day of November,
1965.

(CORPORATE SEAL)

/s/ J. M. Toohar

Those Listed Below

November 30, 1965

R. A. McFeely, Chief of Contracts
Administrative Division

CONTRACT AT(30-1)-1293 - SYLVANIA ELECTRIC PRODUCTS INC.

AC:RAF:pc

All work under the subject contract has been completed and the contract has expired. Please furnish the necessary security and patent clearances.

Addressees:

J. H. Jones, Director, Security Division
R. G. Erdley, Chief, Patent Branch, OCC

USDOE 017199

11-11-65
J. B. [unclear]
December 6, 1965

Mr. R. C. Blair, Manager
U.S. Atomic Energy Commission
Savannah River Operations Office
P.O. Box A
Aiken, S.C.

Dear Mr. Blair:

Re: Contract AT(29-1)-1791 - Termination

Pursuant to the termination of the aforesaid Contract by the United States Atomic Energy Commission and to the provision of Article VIII, as amended, entitled "Settlement of Government Investment in Improvements," a meeting was held at our Hicksville site on November 17, 1965 to determine a mutually agreed upon value of certain government improvements at said Hicksville location. The meeting was attended by Mr. Wise and certain of his associates, as well as various representatives of Sylvania. After extended discussions, it was agreed that Sylvania would make a settlement offer, as described below. Both Mr. Wise and his associates were in agreement therewith.

As background for the subject offer, it was important to recite certain considerations bearing thereon and which we discussed as a result of the aforesaid Contract provision re "Initial Improvements."

In accordance with the subject Contract provision, a mutually agreed upon net salvage value for the subject improvements was concluded in an amount of \$1,700. This took into consideration the respective appraisals of the parties, wherein your quoted net salvage value was \$3,400 and our quoted net salvage value was zero. The zero figure quoted by the Company does not take

into consideration the fact that the cost of removal of said improvements and related restoration far exceeds the value of said improvements. This, however, was called to the Savannah River representatives' attention.

Thereafter, the parties attempted to agree upon an appraised value in place for the subject improvements, based, in part, on the respective appraisals which had been obtained. The figure the AEC quoted was \$36,000, whereas our appraised value in place ranged from zero to \$64,400.25, depending on the usage of the building, or the likelihood thereof. Our appraiser noted that the subject building may well have already reached a state of economic and functional obsolescence, which would make the likelihood of resale remote and thus result in the value of improvements being zero. As indicated in our discussions, we do not intend to use the subject building, but rather intend to sell it and thus the salability thereof has a direct effect on the value of these improvements. The subject appraiser, as well as other realtors has indicated that the sale of the subject building is remote, but that the land on which these improvements are located does have marketability and a prospective purchaser undoubtedly would demolish the subject buildings. In this instance, of course, the value of these improvements would be zero and that was the basis of our initial offer.

In view of our wide divergence for an amount applicable to appraised value in place for the subject improvements we negotiated a mutually agreed appraised value in place of \$25,000.00. With that figure and the mutually agreed net salvage value as our bases and in the interest of settling the subject problem without awaiting the final disposition of these improvements, we agreed to officially make the following offer to you:

1. Sylvania will pay to the AEC in full settlement for the subject improvements, pursuant to the aforesaid Contract provision, the sum of \$10,000.
2. In addition to the aforementioned, Sylvania will withdraw its claim for reimbursement for cost of damage incurred in the removal of government owned equipment from the plant said claim being in the amount of \$3,852.00. It will also relieve the AEC from any further obligation for repairs, restoration, and/or damages re the contractor's property. This release shall not include or affect the agreement of the parties expressed in Modification No. 42 to Contract AT(30-1)-1293.

Mr. R. C. Blair

-3-

12/8/68

The aforesaid offer reflects our discussions at the above mentioned meeting and is made without prejudice to the Company's position on its interpretation of the subject Contract provisions. It is offered, subject to final agreement on contract language, in the interest of obtaining an equitable and expeditious settlement of the problem.

We would appreciate your prompt consideration of this settlement offer.

Very truly yours,

SYLCO DIVISION
PENNSYLVANIA ELECTRIC PRODUCTS INC.

WRM/gg

cc. M. Bue

W. R. Mandaro
Manufacturing Manager

December 6, 1965

Mr. R. C. Blair, Manager
U.S. Atomic Energy Commission
Savannah River Operations Office
P.O. Box A
Aiken, S.C.

Dear Mr. Blair:

Re: Modification #42
Contract AT(30-1)-1293

Enclosed are four copies of the subject modification,
duly signed for Sylcor.

Please note that, as per agreement reached, we have
inserted "zero" as the amount payable under Article 2 (a)
of the modification.

We will await two fully executed copies after necessary
Government signatures have been affixed.

Yours very truly,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.

MB/gg
Enc.

Milton Boll
Contract Administrator

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

Patent Bar
No action
My fully
12/2/66

THIS SUPPLEMENTAL AGREEMENT, entered into the 15th day of December, 1965, effective October 1, 1965, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor at its Hicksville, Long Island, Plant of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time to revise the scope of work and other provisions therein; and

WHEREAS, the Contract, as so amended and revised, now provides in Article VII - GOVERNMENT PROPERTY, that there shall be no charge to the Government for the storage of Government-owned property at the Contractor's Hicksville Plant for a period of 120 days after expiration of said Contract and in Article III - TERM, EXPIRATION AND TERMINATION, that upon expiration, the Contractor shall: (1) discontinue work thereunder, and (2) take such other action as may be required under the provisions of the Contract and subject to the approval of the Commission, such other action as may be appropriate; and

WHEREAS, said Contract expired on September 30, 1965, and the parties thereto now desire to make a written record of the appropriate work which it has been agreed shall be performed by the Contractor within 120 days after such expiration and of the terms and conditions under which such work will be performed; and

WHEREAS, this Modification has been prepared for the purpose of amending the parties' Agreement as aforesaid and for no other purpose.

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. That within a period of 120 days beginning October 1, 1965, the Contractor shall perform the following work at its Hicksville Plant.
 - (a) Furnish or cause to be furnished all personnel, equipment, tools, and materials necessary to decontaminate the entire AT(30-1)-1293 Contract area at Sylcor's Hicksville, New York, facility including the demolition of Building No. 8. Said buildings and ground areas shall be decontaminated to 2000 dpm/100 sq. cms. (disintegrations per minute per 100 square centimeters) fixed alpha and 100 dpm/100 sq. cms. removable alpha.

CONFORMED COPY

USDOE 017193

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

- (b) Prepare, crate, and effect the shipment of Government property as directed by the Commission.
 - (c) Perform such accounting work in connection with the above as may be requested by the Commission.
2. As full and complete compensation for the work performed by the Contractor as provided in 1. above, the Government shall pay the Contractor:
- (a) For repair of damages caused to the Contractor's property by the removal of Government-owned property therefrom, the fixed sum of \$ -0- payable upon final financial settlement of this Contract.
 - (b) For all work except that referred to in (a) hereof performed by the Contractor pursuant to 1. above, the following:
 - (1) Direct labor and salaries at an actual cost basis, based on time records maintained by the Contractor. In addition, a fixed rate of 20% of direct labor and salaries shall be paid for fringe benefits and payroll taxes. These amounts shall be paid monthly as incurred and invoiced.
 - (2) Heat, lights, utility services, and miscellaneous materials used by the Contractor in the performance of work on an actual cost basis, payable monthly as incurred and invoiced.
 - (3) Decontamination of the Plant at a subcontract amount approved by the Contracting Officer, payable monthly as incurred and invoiced.
 - (4) For Hicksville Plant indirect expense (including management, accounting and all other overhead) plus home office general and administrative expense (corporate level), a fixed amount of \$5,030, payable when invoiced as follows: at October 31 - \$3,030; at November 30 - \$1,000; at December 31 - \$1,000.
 - (5) A fixed fee of \$1,860, payable when invoiced as follows: at October 31 - \$686; at November 30 - \$687; at December 31 - \$487.
3. Payments as provided in paragraph 2. above shall be made from obligated funds remaining available under this Contract as of September 30, 1965.
4. That this modification does not alter and shall not be interpreted to alter, change or modify in any respect the rights, duties and responsibilities of the parties as they existed on September 30, 1965, the date of the expiration of Contract AT(30-1)-1293.

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of
the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, SROO

WITNESSES:

/s/ M. Boll

Hicksville, New York
(Address)

/s/ Grace Golden

Hicksville, New York
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ W. R. Mandaro

TITLE: Manufacturing Manager
Sylcor Division

I, J. M. Tooher, certify that I am Asst. Secretary
of Sylvania Electric Products Inc., named above; that W. R. Mandaro
who signed this Agreement on behalf of said corporation, was then Mfg. Mgr.
Sylcor Division of said corporation, and that this Agreement was
duly signed for and in behalf of said corporation by authority of its governing
body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 6th day of December,
1965.

(CORPORATE SEAL)

/s/ J. M. Tooher

A

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 15th day of December, 1965, effective October 1, 1965, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor at its Hicksville, Long Island, Plant of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time to revise the scope of work and other provisions therein; and

WHEREAS, the Contract, as so amended and revised, now provides in Article VII - GOVERNMENT PROPERTY, that there shall be no charge to the Government for the storage of Government-owned property at the Contractor's Hicksville Plant for a period of 120 days after expiration of said Contract and in Article III - TERM, EXPIRATION AND TERMINATION, that upon expiration, the Contractor shall: (1) discontinue work thereunder, and (2) take such other action as may be required under the provisions of the Contract and subject to the approval of the Commission, such other action as may be appropriate; and

WHEREAS, said Contract expired on September 30, 1965, and the parties thereto now desire to make a written record of the appropriate work which it has been agreed shall be performed by the Contractor within 120 days after such expiration and of the terms and conditions under which such work will be performed; and

WHEREAS, this Modification has been prepared for the purpose of amending the parties' Agreement as aforesaid and for no other purpose.

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. That within a period of 120 days beginning October 1, 1965, the Contractor shall perform the following work at its Hicksville Plant.
 - (a) Furnish or cause to be furnished all personnel, equipment, tools, and materials necessary to decontaminate the entire AT(30-1)-1293 Contract area at Sylcor's Hicksville, New York, facility including the demolition of Building No. 8. Said buildings and ground areas shall be decontaminated to 2000 dpm/100 sq. cms. (disintegrations per minute per 100 square centimeters) fixed alpha and 100 dpm/100 sq. cms. removable alpha.

A. E. C. FILE COPY

- (b) Prepare, crate, and effect the shipment of Government property as directed by the Commission.
 - (c) Perform such accounting work in connection with the above as may be requested by the Commission.
2. As full and complete compensation for the work performed by the Contractor as provided in 1. above, the Government shall pay the Contractor:
- (a) For repair of damages caused to the Contractor's property by the removal of Government-owned property therefrom, the fixed sum of \$ -0- payable upon final financial settlement of this Contract.
 - (b) For all work except that referred to in (a) hereof performed by the Contractor pursuant to 1. above, the following:
 - (1) Direct labor and salaries at an actual cost basis, based on time records maintained by the Contractor. In addition, a fixed rate of 20% of direct labor and salaries shall be paid for fringe benefits and payroll taxes. These amounts shall be paid monthly as incurred and invoiced.
 - (2) Heat, lights, utility services, and miscellaneous materials used by the Contractor in the performance of work on an actual cost basis, payable monthly as incurred and invoiced.
 - (3) Decontamination of the Plant at a subcontract amount approved by the Contracting Officer, payable monthly as incurred and invoiced.
 - (4) For Hicksville Plant indirect expense (including management, accounting and all other overhead) plus home office general and administrative expense (corporate level), a fixed amount of \$5,030, payable when invoiced as follows: at October 31 - \$3,030; at November 30 - \$1,000; at December 31 - \$1,000.
 - (5) A fixed fee of \$1,860, payable when invoiced as follows: at October 31 - \$686; at November 30 - \$687; at December 31 - \$487.
3. Payments as provided in paragraph 2. above shall be made from obligated funds remaining available under this Contract as of September 30, 1965.
4. That this modification does not alter and shall not be interpreted to alter, change or modify in any respect the rights, duties and responsibilities of the parties as they existed on September 30, 1965, the date of the expiration of Contract AT(30-1)-1293.

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: [Signature]
R. C. Blair, Manager
TITLE: Savannah River Operations Office

WITNESSES:

M. J. [Signature]
Richville, N.Y.
(Address)
[Signature]
Richville, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: [Signature]
W. R. Mandaro
TITLE: Manufacturing Manager
Sylcor Division

I, J. M. T. [Signature], certify that I am Asst. Secretary of Sylvania Electric Products Inc., named above; that W. R. Mandaro who signed this Agreement on behalf of said corporation, was then Mfg. Mgr. Sylcor Div. of said corporation, and that this Agreement was duly signed for and in behalf of said corporation by authority of its governing body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 6th day of December, 1965.

(CORPORATE SEAL)

[Signature]

Roland A. Anderson, Assistant General
Counsel for Patents, HQ

December 15, 1965

Randall G. Erdley, Chief
Savannah River Patent Group

CONTRACT AT(30-1)-1293 - SYLVANIA ELECTRIC PRODUCTS, INC.

CP:AFW:cm

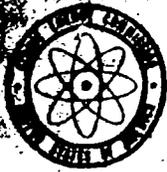
The subject contract expired September 30, 1965 and no extension is expected. Therefore, it would be appreciated if you would furnish a final patent clearance certificate in this contract.

Interim clearance certificates have been issued periodically. The latest certificate was issued for the period July 1, 1963 through September 30, 1964.

cc: H. S. Potter, NYOO

P. S. to Potter: Please advise if we may be of any assistance in this matter.

OFFICE ▶	Patent Br.					
SURNAME ▶	W. P. P.					
DATE ▶	12-15-65					



UNITED STATES
ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE
P. O. BOX A
AIKEN, SOUTH CAROLINA 29802
(TEL. & TEL. NORTH AUGUSTA, S. C.)

DEC 15 1965

Mr. W. R. Mandaro
Manufacturing Manager
Sylcor Division
Sylvania Electric Products Inc.
Cantiague Road
Hicksville, Long Island, New York

Dear Mr. Mandaro:

Your offer of \$10,000 in full settlement for the AES improvements in the Hicksville Plant Site "A" and waiver of all costs and future obligations associated with repairs, restoration and/or damages to Sylvania Electric Products Inc. property in connection with the closeout of Contract AT(30-1)-1293 as set forth in your letter of December 6, 1965, is accepted.

Appropriate contractual language incorporating into the contract the parties' agreement with respect to the above matter is being prepared and will be forwarded for your review and approval shortly.

Sincerely yours,

R. C. Blair
Manager

December 16, 1965

U. S. Atomic Energy Commission
Savannah River Operations Office
P. O. Box A
Aiken, South Carolina

Attention: Mr. A. I. Morgan, Director
Budget and Finance Division

Dear Sir:

In the interest of an early closeout of the financial affairs of Contract 1293 we submit a proposal for the settlement of the Home Office G & A rates for the year 1964 and the nine (9) month period of 1965 to contract termination.

As you know it usually takes a full year or longer for Sylvania and the Department of Defense to agree on a rate for use on D.O.D. contracts. This means that the 1965 rate will not be established until late in 1966 or early 1967. In discussions with your representatives on this subject it was agreed that it would be to our mutual advantage to negotiate these rates in order to accomplish a fast closeout of contract costs.

We have asked our Contracts Department at Waltham, Mass., to supply the necessary data to substantiate a negotiated rate for this purpose. This department has cognizance of the Sylvania Home Office Audit with the D.O.D. Attached is a copy of the reply from Mr. R. C. Clark indicating that the rate for 1964 which has already been audited by the D.O.D. is expected to be settled at 1.49%. Schedules are supplied to substantiate an estimated rate of 1.47% for the nine month period, January - September 1965.

Based on these proposed rates we have calculated the adjustments required to the contract for these periods. Attached are schedules by month showing the contract 1293 costs upon which the G & A rate is applied and the amount

Continued on Page 2

SYLVANIA ELECTRIC PRODUCTS INC.
SYLCON DIVISION
HICKSVILLE, NEW YORK

Mr. A. Y. Morgan

- 2 -

December 16, 1965

of G & A billed during these periods at an estimated rate of 1.7%. Using the proposed rates of 1.49% and 1.47% for 1964 and 1965 respectively, we arrive at a credit due contract 1293 of \$4,004.61 for 1964 and \$1,729.44 for the nine months of 1965.

We respectfully request your consideration of this proposal to prevent undue delay in close out of contract costs.

Very truly yours,

SYLVANIA ELECTRIC PRODUCTS INC.
SYLCON DIVISION


W. G. Crowley
Supervisor of Accounting

WOC/ead
Enc.

cc: Mr. T. Shields - Wilmington
Mr. R. C. Clark - Waltham

Patent Rev.

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 43
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 14th day of January, 1966, effective December 16, 1965, except as otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor at its Hicksville, Long Island, Plant of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and so amended and revised expired on September 30, 1965; and

WHEREAS, prior to the expiration of said Contract, the parties had informally agreed on an amendment to paragraph 2, Article VIII - SETTLEMENT OF GOVERNMENT INVESTMENT IN IMPROVEMENTS, of said Contract but inadvertently neglected to include such an agreement in a formal amendment to the Contract; and

WHEREAS, during the term of said Contract, certain improvements were made at the expense of the Government to the lands and buildings of the Contractor at its Plant on Cantiague Road, and the parties, following expiration of said Contract and acting pursuant to the provisions of Article VIII of said Contract, have agreed on the "appraised value in place;" the "appraised net salvage value" and the "mutually agreed value" of said improvements; and

WHEREAS, within 120 days following the expiration of said Contract, the Government, pursuant to provisions of Article VII - GOVERNMENT PROPERTY, thereof, removed certain Government-owned equipment and supplies from the Contractor's Plant located on Cantiague Road, Hicksville, Long Island, and in the process of such removal damaged buildings of the Contractor; and

WHEREAS, this Modification has been prepared for the sole purpose of formalizing the parties' agreement with respect to matters referred to in the three preceding clauses.

NOW, THEREFORE, the parties hereto do mutually agree as follows:

CONFORMED COPY

*No patent act in required
wait for patent clearance
from N.Y. P.G.
dckj
1/24/66*

Modification No. 43
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

1. Effective September 22, 1965, paragraph 2, Article VIII - SETTLEMENT OF GOVERNMENT INVESTMENT IN IMPROVEMENTS, is amended to read as follows:

"Upon termination or expiration of this Agreement, the appraised net salvage value of the improvements shall be determined by mutual agreement of the parties following separate appraisals to be made by an appraiser to be selected by the Government and an appraiser to be selected by the Contractor. Promptly following determination of the appraised value in place and the appraised net salvage value, the Contractor shall in good faith further negotiate with and pay to the Government an amount equal to the mutually agreed value of such improvements. The mutually agreed value shall be determined after giving full consideration to the appraised value in place and the current value to the Contractor of such improvements. In no event shall the mutually agreed value be less than the appraised net salvage value of the improvements. Failure to agree upon either the appraised value in place, the appraised net salvage value, or the mutually agreed value to the foregoing provisions of this article shall be considered a dispute to be settled in accordance with the general provisions of this Contract entitled Disputes."

2. In the interest of arriving at a mutual agreement with respect to matters listed in 3, 4, and 5 below, the Contractor does hereby withdraw its claim against the Government for reimbursement for damages occurring to its property by the removal of Government-owned equipment at its Plant on Cantiague Road, Hicksville, Long Island, and does hereby release the Government from any further and all obligations for repairs, restoration and/or damages to such property.
3. The Government-owned improvements described in Exhibit "A," attached hereto and made a part hereof, have an "appraised net salvage value" of \$1,700 and an "appraised value in place" of \$25,000.
4. The Contractor agrees to pay to the Government for the improvements described in Exhibit "A," attached hereto, the sum of \$10,000, which sum is the amount determined by the parties to be the mutually agreed value of said improvements, after giving full consideration to the current value to the Contractor of such improvements and the release by the Contractor of the Government from any further obligations for repairs, restoration and/or damages to the Contractor's property as provided in 2. above.
5. Nothing contained herein shall be deemed to prejudice the other rights and obligations of the parties hereto as they existed as of the effective date of this amendment.

Modification No. 43
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of
the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION
BY: /s/ E. L. Kilburn, Deputy Manager
TITLE: Savannah River Operations Office

WITNESSES:

/s/ M. Boll
Hicksville, N. Y.
(Address)

/s/ M. Stiglis
Hicksville, N. Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: /s/ W. R. Mandaro
Manufacturing Manager
TITLE: Sylcor Division

I, J. M. Toohar, certify that I am Asst. Secretary
_____ of Sylvania Electric Products Inc., named above; that
W. R. Mandaro who signed this Agreement on behalf of said
corporation, was then Mfg. Mgr. Sylcor Div. of said corporation,
and that this Agreement was duly signed for and in behalf of said corporation
by authority of its governing body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 7th day of January,
1966.

(CORPORATE SEAL)

/s/ J. M. Toohar

A

UNITED STATES ATOMIC ENERGY COMMISSION

FINDINGS AND DETERMINATION

The Atomic Energy Act of 1954, as amended

Findings

In accordance with the requirements of the Atomic Energy Act of 1954, as amended, I make the following findings:

1. During the past thirteen years, Sylcor Division has operated its Hicksville plant under a cost-plus-fixed-fee type contract with the Commission for the primary performance of canning uranium slugs for the Savannah River Plant reactor use. The land and buildings at the Hicksville plant are owned by Sylcor; however, the equipment utilized in performing this contract work is owned by the Commission, and is used exclusively on Commission work.
2. The Commission has a continuing need for fuel elements for the SRP reactors.
3. Specifications for the production of the fuel elements are not sufficiently definitive to permit entering into a fixed unit price arrangement.
4. Program requirements are subject to immediate change.

Determination

Based upon the foregoing findings, I hereby determine that it is impracticable to secure services of the kind and quality desired without the use of a cost-plus-fixed-fee supplemental agreement, and I hereby authorize the use of said supplemental agreement.

BY: _____

TITLE: _____

DATE: _____

H. L. Kilburn

act'g Mgr. SRP

10/26/64

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 43
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

THIS SUPPLEMENTAL AGREEMENT, entered into the 14th day of January, 1966 effective December 16, 1965; except as otherwise hereinafter specifically provided, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor at its Hicksville, Long Island, Plant of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time and so amended and revised expired on September 30, 1965; and

WHEREAS, prior to the expiration of said Contract, the parties had informally agreed on an amendment to paragraph 2, Article VIII - SETTLEMENT OF GOVERNMENT INVESTMENT IN IMPROVEMENTS, of said Contract but inadvertently neglected to include such an agreement in a formal amendment to the Contract; and

WHEREAS, during the term of said Contract, certain improvements were made at the expense of the Government to the lands and buildings of the Contractor at its Plant on Cantiague Road, and the parties, following expiration of said Contract and acting pursuant to the provisions of Article VIII of said Contract, have agreed on the "appraised value in place," the "appraised net salvage value" and the "mutually agreed value" of said improvements; and

WHEREAS, within 120 days following the expiration of said Contract, the Government, pursuant to provisions of Article VII - GOVERNMENT PROPERTY, thereof, removed certain Government-owned equipment and supplies from the Contractor's Plant located on Cantiague Road, Hicksville, Long Island, and in the process of such removal damaged buildings of the Contractor; and

WHEREAS, this Modification has been prepared for the sole purpose of formalizing the parties' agreement with respect to matters referred to in the three preceding clauses.

NOW, THEREFORE, the parties hereto do mutually agree as follows:

A. E. C. FILE COPY

1. Effective September 22, 1965, paragraph 2, Article VIII - SETTLEMENT OF GOVERNMENT INVESTMENT IN IMPROVEMENTS, is amended to read as follows:

"Upon termination or expiration of this Agreement, the appraised net salvage value of the improvements shall be determined by mutual agreement of the parties following separate appraisals to be made by an appraiser to be selected by the Government and an appraiser to be selected by the Contractor. Promptly following determination of the appraised value in place and the appraised net salvage value, the Contractor shall in good faith further negotiate with and pay to the Government an amount equal to the mutually agreed value of such improvements. The mutually agreed value shall be determined after giving full consideration to the appraised value in place and the current value to the Contractor of such improvements. In no event shall the mutually agreed value be less than the appraised net salvage value of the improvements. Failure to agree upon either the appraised value in place, the appraised net salvage value, or the mutually agreed value to the foregoing provisions of this article shall be considered a dispute to be settled in accordance with the general provisions of this Contract entitled Disputes."

2. In the interest of arriving at a mutual agreement with respect to matters listed in 3, 4, and 5 below, the Contractor does hereby withdraw its claim against the Government for reimbursement for damages occurring to its property by the removal of Government-owned equipment at its Plant on Cantiague Road, Hicksville, Long Island, and does hereby release the Government from any further and all obligations for repairs, restoration and/or damages to such property.
3. The Government-owned improvements described in Exhibit "A," attached hereto and made a part hereof, have an "appraised net salvage value" of \$1,700 and an "appraised value in place" of \$25,000.
4. The Contractor agrees to pay to the Government for the improvements described in Exhibit "A," attached hereto, the sum of \$10,000, which sum is the amount determined by the parties to be the mutually agreed value of said improvements, after giving full consideration to the current value to the Contractor of such improvements and the release by the Contractor of the Government from any further obligations for repairs, restoration and/or damages to the Contractor's property as provided in 2. above.
5. Nothing contained herein shall be deemed to prejudice the other rights and obligations of the parties hereto as they existed as of the effective date of this amendment.

Modification No. 43
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION
BY: H. L. Kilburn
H. L. Kilburn, Deputy Manager
TITLE: Savannah River Operations Office

RAM
10
and
102
7/2

WITNESSES:
M. J. [unclear]
Hicksville, N. Y.
(Address)
M. Stigler
Hicksville, N. Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.
BY: W. R. Mandaro
W. R. Mandaro
TITLE: Manufacturing Manager
Sylcor Div.

I, J. D. [unclear], certify that I am Assistant Secretary
of Sylvania Electric Products Inc., named above; that
W. R. Mandaro who signed this Agreement on behalf of said
corporation, was then Mfg. Mgr. Sylcor Div. of said corporation,
and that this Agreement was duly signed for and in behalf of said corporation
by authority of its governing body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 7th day of July,
1966.

(CORPORATE SEAL)

J. D. [unclear]

EXHIBIT "A"

IMPROVEMENTS TO PROPERTY CONTRACT AT(30-1)-1293

<u>Asset No.</u>	<u>Description</u>	<u>Location</u>	<u>Date Acquired</u>	<u>First Cost Est.</u>	<u>Net Book Value @ 6/30/65</u>
<u>BUILDINGS, HICKSVILLE REHABILITATION</u>					
3478	Install Glass and Security Windows	Bldgs. 1 & 2		\$ 3,916	
	Construct Gas House	Stockagde Area		1,519	
	Heat and Ventilation	Bldgs. 1 & 2		13,053	
	Electricity Installations	Bldgs. 1 & 2		171,224	
	Undergrd Tele & Elec Duct Lines	Bldgs. 1 & 2		1,089	
	Addi.-Cafeteria	Bldgs. 1 & 2		3,750	
	Trenching & Pits (Inside Lines)	Bldg. 1		9,209	
	Quality Control Room	Bldg. 1		1,236	
	Fire Protection System	Bldgs. 1 & 2		22,050	
	Roofing & Roof Monitor	Bldgs. 1 & 2		21,525	
	Fence	Bldg. 1 (Adjacent)		5,276	
			TOTAL	\$253,847	
<u>FENCES</u>					
2002	Chain Link w/16" Gate	Rear Bldg. 1 (Sump)	7/56	\$ 554	\$ 54
3287	400' of 7' Fence w/Gates	Front - Guardhouse	12/53	1,215	652
3289	Security Fence w/Gate	Bldg. 2 Mach. Weld Shop	6/60	557	447
3416	Security Folding Gate	Front - Guardhouse	8/54	165	94
3482	Chain-Link Fence	Bldg. 1 Stockade Area	8/59	2,022	825
			TOTAL	\$ 4,513	\$2,072

IMPROVEMENTS TO PROPERTY CONTRACT AT(30-1)-1293

<u>Asset No.</u>	<u>Description</u>	<u>Location</u>	<u>Date Acquired</u>	<u>First Cost</u>	<u>Net Book Value @ 6/30/65</u>
<u>BUILDING EQUIPMENT</u>					
1924	Fan, Ceiling Exhaust	Bldg. 2 Mach. Shop	9/56	\$ 191	\$ 32
1925	Fan, Ceiling Exhaust	Bldg. 2 Mach. Shop	9/56	191	32
1926	Fan, Ceiling Exhaust	Bldg. 2 Mach. Shop	9/56	191	32
1927	Fan, Ceiling Exhaust	Bldg. 2 AEC Metal Rm.	9/56	191	32
2035	Fan, Ceiling Exhaust	Bldg. 2 Cafeteria	6/56	319	-0-
2036	Fan, Ceiling Exhaust	Bldg. 2 Cafeteria	6/56	319	-0-
2556	Roof Ventilator	Bldg. 2 AEC Stockrm	12/56	99	-0-
3676	Roof Ventilator	Bldg. 2 Cafeteria	8/61	284	166
3677	Roof Ventilator	Bldg. 2 Cafeteria	8/61	285	168
2092	Fountain, Wash, Circular	Bldg. 1 Prod. Washrm	10/56	240	32
3277	Fountain, Wash, Circular	Bldg. 1 Prod. Washrm	7/60	253	131
3278	Fountain, Wash, Circular	Bldg. 2 Prod. Mch. Washrm	7/60	179	85
3279	Fountain, Wash, Circular	Bldg. 2 Prod. Mch. Washrm	7/60	178	84
2180	Fountain, Wash, Circular	Bldg. 2 Mach. Shop Washrm	11/56	240	32
			TOTAL	\$3,160	\$ 826
<u>WALKS, PADS, PARKING FIELD</u>					
3492	Parking Field #2	Park. Area Bldg. 3	12/56	\$8,070	\$1,169
3493	Poles, Tele. Bumper Guards	Parking Fields	2/57	185	34
			TOTAL	\$8,255	\$1,203

IMPROVEMENTS TO PROPERTY CONTRACT AT(30-1)-1293

<u>Asset No.</u>	<u>Description</u>	<u>Location</u>	<u>Date Acquired</u>	<u>First Cost</u>	<u>Net Book Value @ 6/30/65</u>
<u>CHANGES TO BUILDING INTERIOR</u>					
3483	Dustproof Room	Assbly Room Bldg. 1	3/57	\$ 7,473	\$ 3,005
3487	Expand Men's Room	Building 2	8/56	850	101
3488	Expand Accountability Area	Building 1	7/56	5,000	464
3480	Alterations to Cafeteria	Building 2	8/56	2,561	314
3491	Alterations to Chem. Lab.	Building 1	3/53	1,300	-0-
3511	Vent System - Dust Room	Building 1	5/57	714	126
3888	Production Office	Building 1	5/64	<u>1,419</u>	<u>1,251</u>
			TOTAL	\$19,317	\$ 5,261
<u>SUMPS, WELLS AND DRAINS</u>					
3481	Cesspool	Behind Bldg. 1 for Process Water	9/56	400	82
3484	Clay Pipe Drain	Connecting Sumps for Process Water	7/56	250	34
3485	Drain System & Tanks	Bldg. 1 - For Process Water	1/58	12,487	2,711
3489	Stone Area	Grade Area North of Sumps	11/57	2,530	1,242
3490	Dry Well & Catch Basin	Drain Water - Storage Area	11/57	600	140
3494	2 Dry Wells & Catch Basin	Between Bldgs. 1 & 3 Parking Lot 2	5/57	1,060	178
3507	Sump	Behind Bldg. 1	10/56	3,250	415
3508	Sump Incl. Test Bore #3495	Behind Bldg. 1	6/56	2,948	328
3733	Filter Basin	Used w/Plating Machine	1/62	840	546
3757	Dry Well	Rear Bldg. 2	12/61	475	303
3883	Dry Well	Stockade	2/64	420	352
3458	Sump w/Fence	Rear Bldg. 2 - Mach. Shop	1/60	<u>1,740</u>	<u>1,425</u>
			TOTAL	\$27,000	\$ 7,756

IMPROVEMENTS TO PROPERTY CONTRACT AT(30-1)-1293

<u>Asset No.</u>	<u>Description</u>	<u>Location</u>	<u>Date Acquired</u>	<u>First Cost</u>	<u>Net Book Value @ 6/30/65</u>
3515	<u>AUTOMATIC SPRINKLER SYSTEM</u>				
	1. Pump House	AEC Site	7/60	\$ 5,600	
	2. 150,000 Gallon Storage Tank	AEC Site		12,000	
	3. Hot Water System (Temp. Control)	AEC Site		2,500	
	4. Underground installation 6" & 8" lines, check valves, underground piping, excavating, repaving, etc.			26,350	
	5. Sprinkler overhead pipe system incl. sprinkler heads			<u>32,312</u>	
		TOTAL COST	7/60	\$78,762	\$39,402

IMPROVEMENTS TO PROPERTY CONTRACT AT(30-1)-1293

<u>Asset No.</u>	<u>Description</u>	<u>Location</u>	<u>Date Acquired</u>	<u>First Cost</u>	<u>Net Book Value @ 6/30/65</u>
3053	Air Conditioner)	Bldg. 1 Admin. office	8/57	\$ 795	\$ 376
3683	Cooling Tower)	Bldg. 1 used w/above condi.	9/61	1,867	596
3054	Air Conditioner	Bldg. 2 Acctg. Dept.	8/57	200	94
3250-51	Blower w/Motor	Bldg. 1 - on roof	4/60	846	625
3360	Fan, Ventilating	Bldg. 2 - Roof Maint. Shop	6/57	640	382
3093	Exhaust Fan	Bldg. 1 On roof Chem. Lab.	11/57	1,045	244
3275	Air Conditioner	Bldg. 4 Former Purch. area	7/60	967	644
3459	Air System	Bldg. 1 Exhaust-Plating &	12/59	10,975	8,523
3470	Blowers	Chem. Lines	7/60	414	207
3477	Fan	Bldg. 1 Roof	10/60	873	458
TOTAL				\$18,622	\$12,149

JUN 8 1966

SYLCOR HICVL

NAVY PHILA
FUB183CXA008
RR RUEGFU
DE RUEPXS 982 1792024
ZNR UUUUU
T 516-433-9526
R 282024Z
FM N STETSON USAEC N AUGUSTA SC
TO W R MANDARO SYLCOR DIV SYLVANIA ELECTRIC PRODUCTS INC HICKSVILLE
NY
AEC
BT

UNCLAS BUILDINGS 1 AND 2 AND SURROUNDING GROUNDS USED IN CONNECTION WITH THE PERFORMANCE OF CONTRACT AT/30-1/-1293 HAVE BEEN INSPECTED AND FOUND TO BE WITHIN THE ACCEPTABLE RADIOACTIVITY LIMITS SPECIFIED IN MR BLAIRS TWX DATED AUGUST 31 1955. THE BUILDINGS ARE ACCORDINGLY RELEASED TO YOUR NORMAL USE. PLEASE EXECUTE AND RETURN FINAL RELEASE AND GENERAL ASSIGNMENT EARLIEST POSSIBLE DATE REF AC-RAF

BT
Copies to: Crowley, Mandaro, H. Suit 6/9/66

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FINAL RELEASE

Contract No. AT(30-1)-1293

Contractor SYLVANIA ELECTRIC PRODUCTS INC.

The work under Contract No. _____ between the UNITED STATES OF AMERICA (represented by the ATOMIC ENERGY COMMISSION) and the Contractor, having been completed and finally accepted, and in consideration of final payment thereunder, the United States of America, its officers and agents, are hereby released from all claims and demands whatsoever arising under or by virtue of said Contract except as follows:

- (1) specified claims in stated amounts or in estimated amounts where the amounts are not susceptible of exact statement by the Contractor as follows:
- (2) claims, together with reasonable expenses incidental thereto, based upon liabilities of the Contractor to third parties arising out of performance of this Contract; provided that such claims are not known to the Contractor on the date of the execution of the release; and provided further that the Contractor gives notice of such claims in writing to the Contracting Officer not more than six (6) years after the date of the release or the date of any notice to the Contractor that the Government is prepared to make final payment, whichever is earlier; and
- (3) claims for reimbursement of costs (other than expenses of the Contractor by reason of any indemnification of the Government against patent liability), including reasonable expenses incidental thereto; incurred by the Contractor under the provisions of this Contract relating to patents.

The Contractor agrees, in connection with patent matters and with claims which are not released as set forth above, that it will comply with all of the provisions of said Contract, including without limitation those provisions relating to notification of the Contracting Officer and relating to the defense or prosecuting of litigation.

Executed this 29th day of June 1966.

Witnesses:

M. Lee

Hicksville, N.Y.
(Address)
Grace S. Green

Hicksville, N.Y.
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

(Contractor)

By: W. R. Mandaro

W. R. Mandaro

Manufacturing Manager, Sylcor Div.
(Official Title)

GENERAL ASSIGNMENT

KNOW ALL MEN BY THESE PRESENTS, that SYLVANIA ELECTRIC PRODUCTS INC.
(Contractor) (a corporation organized and existing under the laws of the State of
Delaware, with its principal place of business at
Catskill, N.Y.) has been engaged in performing work under
Contract No. AT(30-1)-1293 with the UNITED STATES OF AMERICA (herein-
after called the "Government"), represented by the UNITED STATES ATOMIC ENERGY
COMMISSION (hereinafter called the "Commission"), work under said Contract
having been (completed and finally accepted) (terminated), and in consideration
of the terms of said Contract and final payment thereunder, the Contractor does
hereby presently assign and transfer to the Government, to the extent not hereto-
fore assigned or transferred to the Government, (a) any and all subcontracts,
purchase orders, and other agreements entered into in the performance of the
Contract and all of the rights and interests it may have thereunder, except those
listed in Schedule "A" attached hereto, including without limitation transfer of
the administration of such subcontracts, purchase orders, and other agreements;
and (b) all of its rights to and interests in any refunds, rebates, allowances,
accounts receivable, or other credits applicable to or in connection with any
expenditures which were allowable costs under the said Contract, except as
specifically set forth in Schedule "B," attached hereto and hereby expressly
made a part hereof.

In addition, the Contractor does hereby presently assign and transfer to the
Government all rights and interests of the Contractor in any refunds, rebates
or other credits, applicable to or against any expenditures which were allowable
costs under the above-numbered Contract which are not presently known but which
may materialize at a later date.

The Contractor agrees to furnish, at the expense of the Government, any and all assistance which may be required of it in connection with the enforcement of the rights or interests herein assigned or the settlement or defense of claims or litigation arising out of the subcontracts, purchase orders, or other agreements herein or heretofore assigned or transferred, such assistance to include furnishing any and all pertinent records, correspondence, documents, and other papers in its possession, and the assistance of employees possessing knowledge of the facts for conference and for attendance in court as witnesses in connection with the enforcement of said rights or the settlement or defense of said claims or litigation.

The Government, for its part, does hereby assume all obligations which the Contractor may have under the subcontracts, purchase orders, and other agreements herein or heretofore assigned or transferred, to the extent that such obligations are allowable costs under the Contract and does hereby release the Contractor from all liability and responsibility for the collection of any of said refunds, rebates, allowances, accounts receivable, or other credits herein assigned, and for the enforcement of any rights, or the defense of any claims or litigation with respect thereto, except as herein provided.

Executed this 29th day of June, 1962.

WITNESSES:

M. Lee

 Hicksville, N.Y.
 (Address)
Grace Lee

 Hicksville, N.Y.
 (Address)

PENNSYLVANIA ELECTRIC PRODUCTS INC.

Contractor

By:

W. H. Mandaro

 W. H. Mandaro
 Manufacturing Manager, Sylecor Div.
 Official Title

ACCEPTANCE BY UNITED STATES OF AMERICA
 BY: U. S. ATOMIC ENERGY COMMISSION

BY:

M. Stetson

 M. Stetson, Manager

TITLE: Savannah River Operations Office

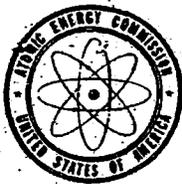
If the Contractor is a corporation, the following certificate will be executed:

CORPORATE CERTIFICATE

I, J. D. TRENKLE certify that I am the PRESIDENT of the Corporation executing the foregoing assignment; that W. J. MASON who signed the said document on behalf of the assignor, was then VICE-PRES STEWART (officer) of said Corporation; that I know his signature, and his signature thereto is genuine; and that said assignment was duly signed, sealed, and attested for and in behalf of said corporation by authority of its governing body.

(CORPORATE SEAL)

J. D. TRENKLE



UNITED STATES
ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE
P. O. BOX A
AIKEN, SOUTH CAROLINA 29801
(TEL. & TEL. NORTH AUGUSTA, S. C.)

May 2, 1973

L. Joe Deal, Asst. Director for
Health Protection
Division of Operational Safety, HQ

RADIOLOGICAL CLEANUP AND SITE DISPOSAL ACTIONS

Recent conversation between K. E. Herde of this office and R. E. Allen of your staff revealed a change in plans since your February 9, 1973, memo on this subject. Mr. Allen requested that pertinent correspondence and reports on the final cleanup of the Sylcor Plant at Hicksville, New York, be transmitted since he does not now plan to visit this site.

In addition to specific response to the four items included in your memorandum, we are sending fourteen enclosures that describe the radiological aspects of the Sylcor operations. Response to the four items follows:

1. The criteria applied were at that time being developed cooperatively by your Division and the Regulatory group for subsequent inclusion in AEC Manual Chapters 5170 and 5182. (See enclosures numbered 1 and 2.)
2. The final radiological situation of the site and buildings is described in an enclosed copy of "Decontamination of Sylcor 1293 Area" by F. J. Bradley, Health Physicist of Isotopes, Inc. (Encl. 3) who was retained by Sylcor to decontaminate the facility. Correspondence confirming the transfer of uranium scrap to the Fernald, Ohio, plant for recovery, and wastes, sludges and contaminated equipment to the Savannah River Plant site is also enclosed.
3. Correspondence and records not previously mentioned are included in part in other enclosures.
4. The history of operational activity and Atomic Energy Commission involvement at the Hicksville site predated SROO participation which began by an agreement of July 30, 1954. Previous to that date the contract AT(30-1)-1293 was a research and development

May 2, 1973

contract between the New York Operations Office and Sylvania Electric Products, Inc. The original proposal of the SROO contract involved a fixed fee agreement for the production of 25,000 enriched uranium slugs to be canned by a pressure bonding technique developed by Sylvania at the Hicksville plant. The necessary aluminum cans, caps and alloy slugs were furnished to Sylvania by the Commission. This original agreement was to be completed by December 31, 1954. That agreement was followed by a cost-plus-fixed-fee contract agreement that continued under the number designation AT(30-1)-1293 for eleven additional years at an average annual cost of nearly three million dollars. The machining and cladding of fuel elements for SRP reactors continued to be the entire service rendered by Sylcor under this contract. The seven principal buildings (see sketch in Encl. 3) had a total square footage of about 50,000. After January 1965 a part of the facility was used for non-AEC commercial interest contracts.

Since New York Operations Office was conveniently nearby and had previously been obliged to make radiological surveys at that site, their health physics services were used to supplement frequent visits by this office. The staff of the Hicksville operation of Sylcor usually varied from 70 to 130 persons. Final cleanup under the direction of Isotopes, Inc. involved the drumming of sump sludges for shipment by this office to the SRP contaminated waste burial grounds.

If additional details are required, we would be pleased to have one of your staff assist in the search through a rather voluminous general correspondence file on the Sylcor contract negotiations.

MEA:KEH:dln


G. H. Giboney, Director
Office of Environmental Affairs

Enclosures:
See Attached List

*Copy from
5/2/73 Giboney to
Deal letter*

Enclosures:

1. Memo August 2, 1965, "Surface Contamination Control Criteria for Unconditional Release of Contaminated Property," from A. F. Perge, DOS, to P. J. Hagelston, SRO.
2. Memo May 5, 1966, "Approval of Release of Sylcor Buildings for Unlimited Uses or Sale," from P. J. Hagelston, S&TS, SRO, to J. S. Hopkins, Admin. Div., SRO.
3. Report, January 31, 1966, "Decontamination of Sylcor 1293 Area Hicksville," by Dr. F. J. Bradley, Health Physicist, Isotopes, Inc.
4. Letter May 26, 1965, "Scrap to Fernald for Recovery," from Edward Meyer, Sylcor, to R. C. Blair, SRO Manager.
5. Memo July 30, 1965, "Disposal of Contaminated Waste from Sylcor," from I. A. Hobbs, T&P, SRO, to R. C. Blair, SRO Manager.
6. Letter August 4, 1965, "Transfer of Equipment from Sylcor to Savannah River Plant," from J. A. Monier, Du Pont, to R. C. Blair, SRO Manager.
7. Memo November 4, 1965, "Survey and Disposal of Equipment at Sylcor," from G. H. Giboney, S&TS, to J. S. Hopkins, Admin. Div., SRO.
8. Agreement January 1, 1965, "Use of Government Owned Facilities in Performance of Private Commercial Work," between AEC and Sylcor.
9. TWX May 18, 1965, "Notice, Termination of Contract," from F. P. Baranowski, HQ, to R. C. Blair, SRO Manager.
10. Letter December 6, 1965, "Contract Termination," from W. R. Mandaro, Sylcor, to R. C. Blair, SRO Manager.
11. Memo April 1, 1966, "Inspection of Sylcor's Hicksville Plant," from N. Stetson, SRO Manager, to W. M. Johnson, NYOO Manager.
12. Memo April 4, 1966, "Arrangements for Radiological Monitoring and Consultation at Sylcor," from K. E. Herde, S&TS, to P. J. Hagelston, S&TS Div., SROO.
13. Memo April 12, 1966, "Levels of Contamination Observed at Sylcor," from K. E. Herde, S&TS, to P. J. Hagelston, S&TS Div., SROO.
14. Letter February 1, 1966, "Compliance with N. Y. State Industrial Code," from Dr. Morris Kleinfeld, Consulting Medical Director, to Henry Grieb, Sylcor.

GENERAL SERVICES ADMINISTRATION		5099-101	NSN 7540-01-317-7368
Fax #		301-279-9221	
Phone #		202-626-1057	
Dept./Agency		HAI (B. MARSH)	
From		C. Young	
# of pages		3	
FAX TRANSMITTAL			
OPTIONAL FORM 99 (7-90)			

DOE Office of Site Closure
FUSRAP Room



UNITED STATES GOVERNMENT

Memorandum

TO : P. J. Hagelston, Director
Safety & Technical Services Division, SR

FROM : Alex F. Perge, Chief, Materials Processing
Safety Br., Div. of Operational Safety, HQ

SUBJECT: SURFACE CONTAMINATION CONTROL CRITERIA FOR UNCONDITIONAL RELEASE OF
CONTAMINATED PROPERTY

DATE: August 2, 1965



OS:MPS:AAS

Messrs. Herde and Collins, SR, have recently contacted A. Schoen of this office regarding acceptable radioactive surface contamination levels for the unconditional release of uranium contaminated facilities and equipment at the Sylcor plant in Hicksville. This office and the regulatory staff have been cooperating in the development of criteria governing the unconditional release of surface contaminated equipment, scrap, and facilities for inclusion in the federal regulations and revisions to AEC Manual Chapters 5170 and 5182. The appropriate changes in the regulations and the manual chapters are not final yet. However, the technical criteria have been agreed to and have been used for some time in the regulatory program and also certain AEC operations.

The table below lists the values that are presently considered acceptable for unconditional release and unrestricted use of facilities, equipment and scrap contaminated with normal, enriched or depleted uranium, natural thorium, and Th 232.

PERMISSIBLE SURFACE CONTAMINATION LEVELS

	<u>Fixed</u>		<u>Transferable*</u>
	<u>Average</u> (d/m/100 cm ²)	<u>Maximum</u> (mrad/hr)	<u>Maximum**</u> (d/m/100 cm ²)
<u>Alpha</u>	5000	25000	1000
<u>Beta - gamma</u>	0.2	1.0	

* Radioactivity which is detected by commonly used smear survey techniques.

** Average contamination levels are not specified. Items which are generally contaminated with transferable activity warrant further decontamination.



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

DOE Office of Site Closure
FUSRAP Room



UNITED STATES GOVERNMENT

Memorandum

(4)

TO : J. S. Hopkins, Director
Administrative Division

DATE: May 3, 1965

FROM : P. J. Bagelston, Director
Safety and Technical Services Division

SUBJECT: APPROVAL OF RELEASE OF SYLOR BUILDINGS FOR UNLIMITED USES OR SALE.

STR:KEH:th

This Division now has on file letters and/or survey reports of the several groups that have been involved in cleaning and monitoring buildings 1 and 2 and surrounding grounds that have been used under Contract AT(30-1)-1293. All reports agree with the findings of this Division that the buildings are now clean and within acceptable radioactivity limits as defined in a TWX from R. C. Blair on August 3, 1965, (uranium contamination to a level of 2000 alpha disintegrations per minute maximum of fixed contamination when averaged over a one hundred cm² area). Essentially all unfixed or smearable contamination has been removed by the cleaning operations of Isotopes Incorporated, arranged by purchase orders.

With this cleanup completed you are hereby authorized to release the facilities at your discretion.



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

2

DECONTAMINATION OF
SYLCOR 1293 AREA
HICKSVILLE, LONG ISLAND, NEW YORK

F. J. Bradley, Ph.D.
Health Physicist

ISOTOPES, INC.
123 Woodland Ave.
Westwood, New Jersey

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I. INTRODUCTION

A. Initial Surveys

The planning and execution of the decontamination operations at the Sylcor Area #1293 was under the direction of Dr. F. J. Bradley, Health Physicist to Isotopes, Inc. The decontamination plan was prepared as a result of a complete survey of the area, and subsequent experience required little modification to the original concept. The time schedule was closely adhered to for the decontamination operation per se, but slippage occurred by the difficulties experienced in transporting the wastes off-site. This latter contingency was not, however, under the immediate control of Isotopes, Inc.

The surveys were made using an alpha survey meter (Eberline Model PAC-3G) for the determination of fixed contamination levels, and smears were taken using Whatman 41 filter paper to determine levels of transferable contamination. All smears pre- and post-decontamination were counted in a windowless gas flow counter operating in the alpha proportional region and having an absolute counting efficiency of 50%. Both the windowless flow counter and the Eberline Instrument Company PAC-3G portable counter were calibrated with a Pu-239 alpha standard with an activity of 2914 dpm.

B. Cleaning Techniques

The general decontamination procedure was to first survey, then in turn dry vacuum, scrub and wash, wet vacuum, followed by a further survey. The procedure would be repeated until decontamination was complete or the surface removed. The procedure was, in fact, repeated for several areas four times

before it became apparent that complete removal of the area was required. On the other hand, Building #8 was demolished and the surrounding concrete and macadam removed without prior attempts at decontamination except for dry vacuuming.

Liquid wastes generated in the scrubbing, washing and wet vacuuming operation were transferred to steel drums and vermiculite added to convert from liquid to solid wastes.

Personnel involved were provided with disposable cover clothing, shoe covering, gloves, and respirators where necessary. All heavy construction equipment used in decontamination operations were monitored by Isotopes, Inc. before reverting back to normal non-radiation use.

II. SCHEDULE OF DECONTAMINATION OPERATIONS

A. Building #1

1. Pre-Decontamination Survey

The building was divided for operational convenience into 59 sections encompassing approximately 20,000 square feet within the confines of a one-story structure. The results of the initial smear survey are given in Appendix A. This survey indicated that extensive decontamination would be required in the metallographic and adjacent laboratory areas (Sections 14, 15, 24, 25, 26, 27 and 28). The floors in these areas were covered with linoleum tile, or a mastic floor covering and the rooms were serviced by seven exhaust ducts, at least four of which were internally contaminated.

Sections 49 and 52 housed a conveyor area which was contaminated with uranium in soluble form. Since the area was covered in part with brick or ceramic tile it was assumed that some of the uranium had penetrated the cracks and that brick and tile, in part at least, would need to be removed. Two areas adjacent to the conveyor area, Sections 51 and 54, also showed evidence of smearable contamination and would require decontamination.

On the roof of Building #1 there were two areas which required decontamination. The exhaust system including fan and filter for the metallographic area would need to be removed and a contaminated wooden shack over section 52 cut down.

The exterior concrete area adjoining section 52 was also found to be contaminated. Since soluble uranium had penetrated the porous concrete to an unknown depth, the standard decontamination procedure would be followed initially, but should these procedures prove ineffective the concrete would be removed.

2. Decontamination

In room 14 the contaminated ductwork was removed by cutting down, sealing the ends with plastic sheet and passing up to the roof through a hole in the ceiling. This procedure facilitated removal and also prevented spread of activity in the building. The ductwork was then lowered off the roof and placed onto trucks for shipment off-site as radioactive waste. The walls and floor were then subjected to the standard decontamination procedure. Altogether this procedure was repeated three times. In some places one layer of floor tile in others two layers of tile had to be removed before the room was brought within acceptable limits.

Rooms 15, 24, 25, 26, 27 and 28 were decontaminated in the standard manner together with the removal of tile of "mastic" floor covering in a few places.

The plating area comprising sections 49 and 52 were decontaminated three times by the standard procedure which brought the smearable contamination well within limits, but nevertheless fixed contamination levels remained above acceptable limits. In the final washing in this area dilute hydrochloric acid solutions with "Radiac Wash" were used, but this appeared to increase the level of surface contamination since uranium was brought up through the cracks. Since the prescribed limits could not be reached by washing and scrubbing, all of the ceramic tile and about one quarter of the facing brick on conveyor pad were removed. This procedure exposed several further contaminated areas and the whole area was cleaned again.

Sections 51 and 54 were simply washed and scrubbed three times and were readily brought within limits.

Three more areas in Sections 48 and 50 not included in the preliminary survey were found to be contaminated but responded to decontamination by standard techniques.

On the roof the filtering system for section 14 was cut down and lowered off the roof. The wooden shack over section 52 was removed in a similar manner.

Several areas in the building which were within the acceptable range for transferable contamination, but not fixed contamination, were covered over with a permanent plastic sealer. These areas were found to be isolated instances and not general in extent. The only alternative would have been the removal of the concrete floor.

The concrete pad outside section 52 was washed, scrubbed, vacuumed four times, the last time with an acid solution of pH3. Despite such vigorous washing and scrubbing, even with metal brushes, the fixed contamination limits were not reached. In fact, the acid solution appeared again to have the effect of bringing dissolved uranium to the surface. This whole concrete area was therefore removed and the concrete shipped off-site.

B. Building #2

1. Pre-Decontamination Survey

Building #2 was a one story, wooden frame structure with an area of approximately 32,000 square feet. The uranium which had been in this building proved less soluble than that in Building #1 and therefore the washing procedure might be less effective than scrubbing. The building for purposes of the survey and decontamination was divided into 45 sections.

Portions of section #27 gave survey meter readings above 2000 dpm/100cm² although smears were within the acceptable range. Since the floor was covered in part with a layer of grease it was felt that the use of grease cutting agents in cleaning solution would remove the contaminant.

Sections 33 and 34 were a locker washroom with tile floor; standard decontamination procedure with removal of tile where necessary was anticipated for this area.

Section 45 showed evidence of considerable floor contamination. It was expected that two repeat standard decontamination procedures with possible removal of some concrete layers would be sufficient.

Two areas, one exterior to section 20 and the other exterior to section 27, were thought to require decontamination by cleaning and possibly by removal of concrete.

2. Decontamination

Section 27 was given the standard decontamination procedure and brought to within acceptable limits after three washing-scrubbing combinations. The section was more generally contaminated than originally thought and therefore the whole machine shop area (sections 27 and 30) was thoroughly cleaned. Apparently the contamination had not penetrated deeply since the area was decontaminated relatively easily. In checking the ceiling a heavily contaminated exhaust duct was discovered and this required careful cutting and subsequent removal to prevent the spread of contaminated dust.

Sections 32, 33, 34, 35 and 38 were washed and scrubbed and readily brought within limits.

The Production Machining Section, 45, was decontaminated using the standard procedures three times followed by an acid solution of pH3. Uranium was found embedded in the tape which outlined access walks in the room. Removal of the tape left no residual traces. The room was brought within acceptable limits for removable contamination with few problems but more difficulty was experienced with fixed contamination.

Section 31 was decontaminated by washing and scrubbing and the removal of dry-wall up to a height of five feet on one wall.

The exterior areas adjacent to sections 20 and 27 were cleaned by vigorous washing and scrubbing.

In a few areas in Building #2 which were within acceptable limits for transferable contamination, but not for fixed, were covered with a permanent plastic sealer.

C. Building #7

1. Pre-Decontamination Survey

The concrete floor of Building #7 showed relatively low levels of contamination. One or possibly two standard decontamination procedures were deemed adequate to reduce the contamination level to acceptable limits.

2. Decontamination

The floor and walls up to a height of five feet were cleaned twice in the standard manner and the activity levels in the building were thereafter within acceptable limits.

D. Building #8 and Adjoining Exterior Areas

1. Pre-Decontamination Survey

This building was the most heavily contaminated of the buildings

surveyed. The building had a concrete base with center structure fabricated from cinder block and additions to each side constructed with "Transite." There was a concrete drive up to one of the "Transite" additions and a macadam drive up to the other. Around the rear of the building there was a concrete walk that also proved contaminated. Within the building the contamination extended onto the walls of the structure. Because of the extensive interior and exterior contamination and the type of construction materials, used, it was proposed to demolish the building and remove the contaminated concrete and macadam around the building.

After all the utilities had been turned off, the building would first be dry vacuumed to reduce potential hazards during demolition. The building would then be carefully demolished with the aid of a bulldozer. All demolition equipment would be checked before removal from the premises

2. Decontamination

The interior of the building was vacuumed and then all of the utilities turned off. A bulldozer with a 14 foot blade was used to demolish the building and the debris was stacked for shipment off-site. The contaminated concrete and macadam between Building #8 and section 45, Building #2 was totally removed and also stacked for shipment off-site. During the course of this operation the bulldozer unearthed an uncharted sump approximately 15 feet in diameter by 20 feet deep and narrowly escaped an accident.

E. Other Areas

1. Pre-Decontamination Survey

Meter readings on the soil on which 30 and 55 gallon drums were stored between buildings 6 and 7 and sump #2 indicated heavy soil contamination.

It was proposed that the top four inches of soil would be removed on removal of the contaminated drums.

All three sumps were checked but only sump #3 indicated levels requiring extensive decontamination. Removal of the top four inches of soil from this sump was also recommended.

2. Decontamination

The contaminated soil between Buildings 6 and 7 and sump #2 was removed with the aid of a bulldozer. The soil was then placed in sealed drums and shipped off-site.

In the case of sump #3, the removal of the top soil layer proved more difficult. The bottom of the sump was about 15 feet below grade which prevented the use of a bulldozer. Nor was it possible for personnel to stand in the bottom of the sump to perform manual operations due to the soft texture of the soil. The most effective method of removing the top soil layer was by the use of a crane with bucket. The soil was removed by this means and placed aboard tractor trailers for removal off-site.

III. COMMENTS AND CONCLUSIONS

Fifteen truckloads averaging 20 tons each for a total of 300 tons of contaminated waste material was shipped off-site starting on 9 November 1965 and ending on 27 December 1965. This material was placed on the truck in drums or bins using a forklift, crane or payloader.

All of the equipment used by Isotopes, Inc. in the decontamination operation was cleaned and checked before removal off-site. Because the decontamination techniques which were used tended to reduce air contamination, respirators were needed only when it was necessary to cut out contaminated ductwork. Twenty-four pre- and post-decontamination urine samples were collected and analyzed and all were found to be within the normal background range.

Five soil samples and two water samples and a tap water sample were analyzed by fluorimetry for uranium. The results are given in Appendix I. Since there was no water in sump #3 when the sumps were sampled, the probable uranium water concentration was estimated based on the results found for the ratio of water to soil activity in sumps #1 and #2.

The Appendix summarizes the health physics efforts in cleaning the 1293 area. In Appendix I the final decontamination survey and certificate are reproduced together with an addendum for the survey of the roof of Building #2 and the radiochemical results on the soil and water samples from the sumps. Appendix II reproduces the intermediate smear results which were taken following dry vacuum, scrub, wash and wet vacuum sequence. This was not done following each sequence in every area because experience had shown from the early surveys that two and usually three sequences were required to bring a contamin-

ated area within the prescribed limits, and intermediate surveys were deemed unnecessary. With the techniques and cleaning solutions which were used there was no area which could not be brought well below 100 dpm/100cm² removable contamination. Furthermore, with personnel control that was employed no spread of activity outside of originally contaminated areas was experienced. On the other hand, more difficulty was experienced in decontaminating to less than 2,000 dpm/100cm² fixed activity. This was partly the result of the depth to which the contamination had penetrated, and the porous surface of most contaminated areas. In some areas, such as Building #1, section 52, and the exterior concrete pad adjacent to it which were decontaminated below 100 dpm/100cm² removable the surfaces had to be removed because the average fixed contamination was greater than an average 2,000 dpm/100 cm². The acid solutions did not prove as effective as one might have hoped in decontamination since they dissolved the contaminant in the porous cracks and brought it to the surface where it was not entirely removed by wash solution.

Approximately 900 smears were taken on all surfaces in the course of the pre-, intermediate-, and post-contamination surveys. These smears covered an actual area of 100 square feet and, taken together with a spreading factor of about 10 square feet, an estimated 10,000 square feet was carefully checked out of a total floor area of 50,000 square feet. It is felt that such surveillance leaves only a small probability that areas above 100 dpm/100cm² removable and 2,000 dpm/100 cm² average fixed still exist in the 1293 area.

APPENDIX I

Copy of Original Decontamination
Certificate with Addendum

CERTIFICATE OF DECONTAMINATION

This is to certify that the following location

Sylvania Electric Products, Inc.
Sylcor Division
1293 Area
Cantiague Road
Hicksville, New York 11802

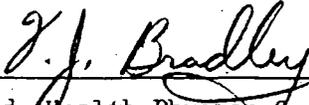
has been decontaminated to the following limits

0 to 100 alpha dpm per 100 cm² transferable contamination
and 0 to 2,000 alpha dpm per 100 cm² fixed contamination.

Transferable contamination was determined with a windowless flow counter operating in the alpha proportional region. The counter was calibrated with a Pu-239 alpha standard with an activity of 2914 dpm and operated with an efficiency of 50%.

Fixed contamination was determined with an Eberline Instrument Corporation Model PAC-3G Gas Proportional Alpha Counter. This instrument was calibrated with a Pu-239 alpha standard with an activity of 2914 dpm. Overall efficiency, including area correction, was 27%. Meter response equivalent to 2,000 alpha dpm per 100 cm² was therefore 540 cpm.

The above location is decontaminated in conformity with the State of New York Industrial Code Rule Number 38-29. All work performed in accordance with U. S. Atomic Energy Commission Title 10, Part 20 and New York State Industrial Code Rule 38.


Head, Health Physics Section
January 3, 1966

A-1-3

Parking Field #1

Parking Field #3

Bldg. 5

CORP

AEC

Parking Field #2

Bldg. 1

Bldg. 6

Bldg. 7

Bldg. 2

9

SUMP #3

8
BUILDING
DEMOLISHED

SUMP #1

SUMP #2

Bldg. 10

11 15

12

13

14

Bldg. 4

MUSTER AREA



COMMERCIAL FACILITIES



CORPORATE FACILITIES



AEC FACILITIES

1293 AREA

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SURFACE CONTAMINATION SURVEY

SURVEY INSTRUMENT: EBERLINE INSTRUMENT

CORP. PAC 3G WITH ALPHA PROBE

DATE OF SURVEY 21 AND 23 DEC 1965

INSTRUMENT CALIBRATION: 550 CPM ~

2000 DPM
100 CM²

ALL UNDERLINED READINGS IN CPM

A-1-4

Parking Field #1

Parking Field #3

Bldg. 5

CORP

AE

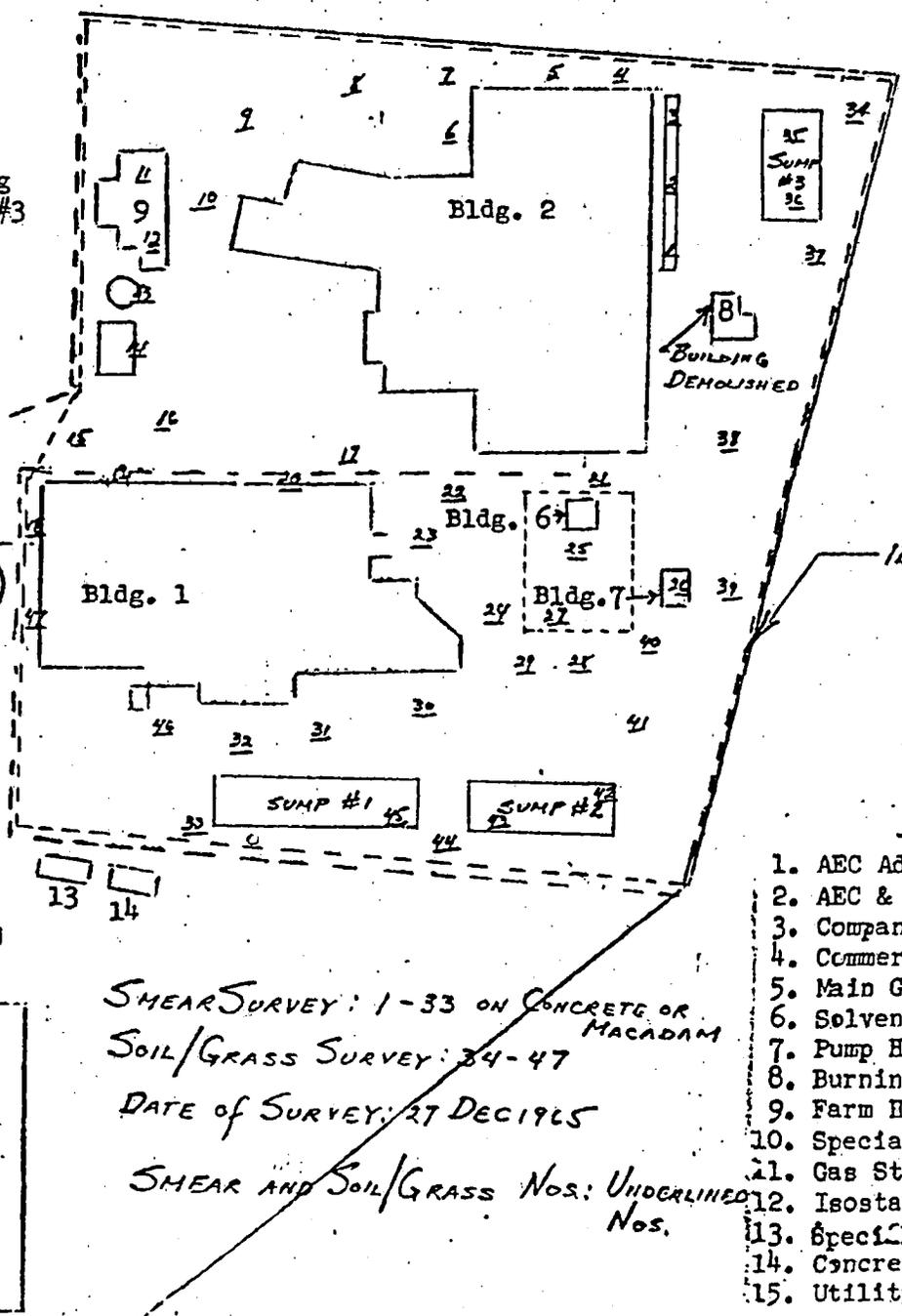
Parking Field #2

Bldg. 10

11 15

12

Bldg. 4



MUSTER AREA

- COMMERCIAL FACILITIES
- CORPORATE FACILITIES
- AEC FACILITIES

1293 AREA

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SHEAR SURVEY: 1-33 ON CONCRETE OR MACADAM

SOIL/GRASS SURVEY: 34-47

DATE OF SURVEY: 27 DEC 1965

SHEAR AND SOIL/GRASS NOS: UNDERLINED NOS.

SMEAR RESULTS

Location of Survey Sylcor 1293 Area (Exterior) Date of Survey 12/27/65

Counting Instrument RIDL 2π:Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey E. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS (Pu ²³⁹)
STD#1	2863	2	1431.5			$\frac{dpm}{cpm} = \frac{2914}{1432} - 2.04$
BG#1	2	2	1.0			
BG#2	3	2	1.5			
BG#3	5	2	2.5	1.7 avg.		
1	3	2	1.5	-		
2	4	2	2.0	0.3	0.6	
3	5	2	2.5	0.8	1.6	
4	1	2	0.5	-	-	
5	3	2	1.5	-	-	
6	6	2	3.0	1.3	2.6	
7	7	2	3.5	1.8	3.6	
8	4	2	2.0	0.3	0.6	
9	6	2	3.0	1.3	2.6	
10	2	2	1.0	-	-	
11	8	2	4.0	2.3	4.6	
12	2	2	1.0	-	-	
13	3	2	1.5	-	-	
14	2	2	1.0	-	-	
15	5	2	2.5	0.8	1.6	

SMEAR RESULTS

Location of Survey Sylcor 1293 Area (Exterior) Date of Survey 12/27/65
 Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65
 Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
16	4	2	2.0	0.3	0.6	
17	3	2	1.5	-	-	
18	7	2	3.5	1.8	3.6	
19	5	2	2.5	0.8	1.6	
20	2	2	1.0	-	-	
21	9	2	4.5	2.8	5.6	
22	4	2	2.0	0.3	0.6	
23	9	2	4.5	2.8	5.6	
24	9	2	4.5	2.8	5.6	
25	7	2	3.5	1.8	3.6	
26	14	2	7.0	5.3	10.6	
27	5	2	2.5	0.8	1.6	
28	8	2	4.0	2.3	4.6	
29	9	2	4.5	2.8	5.6	
30	6	2	3.0	1.3	2.6	
31	10	2	5.0	3.3	6.6	
32	5	2	2.5	0.8	1.6	
33	5	2	2.5	0.8	1.6	

SMEAR RESULTS

Location of Survey Sylcor: 1293 Area (Exterior) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/31/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/g gram sample	REMARKS
34	8	2	4.0	3.2	6.4	Soil/Grass Samples
35	22	2	11.0	10.2	20.4	Soil/Grass Samples
36	28	2	14.0	13.2	26.4	Soil/Grass Samples
37	21	2	10.5	9.7	19.4	Soil/Grass Samples
38	4	2	2.0	0.2	0.4	Soil/Grass Samples
39	63	2	31.5	30.7	61.4	Soil/Grass Samples
40	15	2	7.5	6.7	13.4	Soil/Grass Samples
41	14	2	7.0	6.2	12.4	Soil/Grass Samples
42	8	2	4.0	3.2	6.4	Soil/Grass Samples
43	17	2	8.5	7.7	15.4	Soil/Grass Samples
44	8	2	4.0	3.2	6.4	Soil/Grass Samples
45	10	2	5.0	4.2	8.4	Soil/Grass Samples
46	7	2	3.5	2.7	5.4	Soil/Grass Samples
47	1	2	0.5	-	-	Soil/Grass Samples

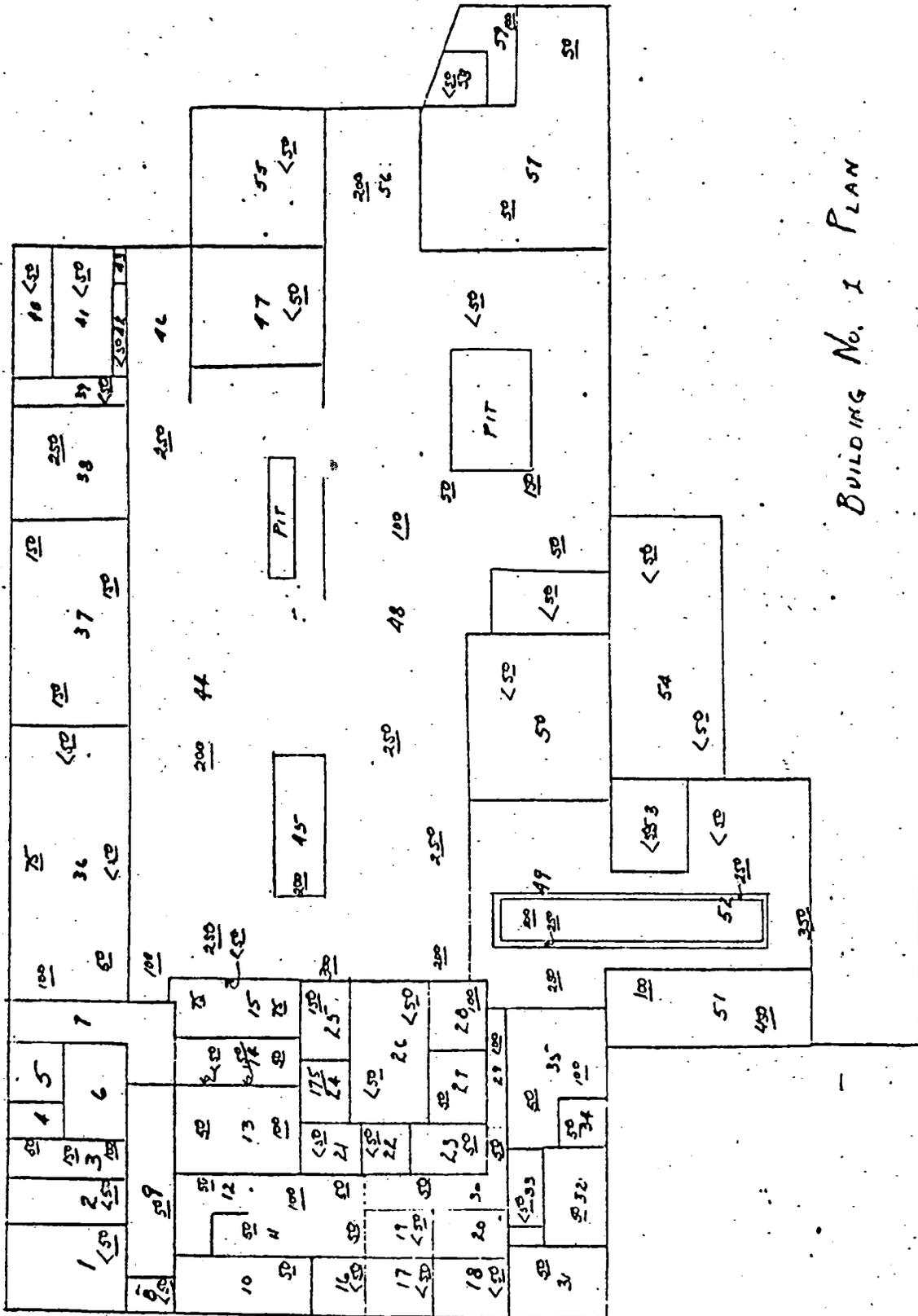
SURFACE MONITORING - SEVE.

SURVEY INSTRUMENT: EBERLINE INSTRUMENT CORP.: PAC-3G WITH ALPHA PROCE

DATE OF SURVEY 27 AND 30 DEC 1965

INSTRUMENT CALIBRATION: 550 CPM ~ 2000 RPM / 100 CPM

ALL UNDERLINED READINGS IN CPM



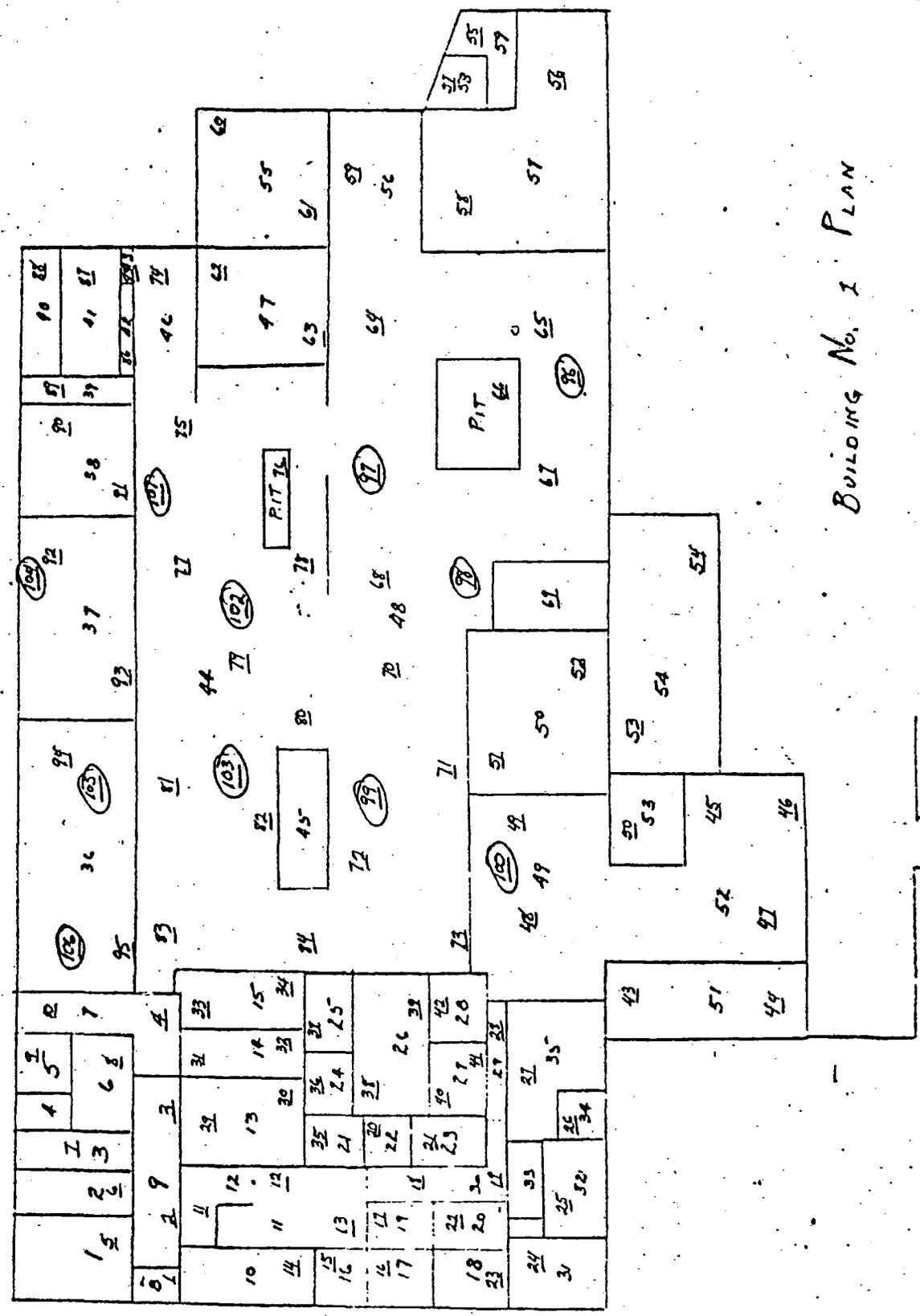
BUILDING No. 1 PLAN

SMEAR SURVEY

DATE OF SURVEY : 27 DEC 1965

SMEAR NOS. : UNDERLINED NOS.

SMEAR NOS. CIRCLED : SMEARS TAKEN ON OVERHEAD FIXTURES



BUILDING No. 1 PLAN

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/28/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ (2914 dpm)
STD#1	2934	2				$\frac{\text{dpm}}{\text{cpm}} \frac{2914}{1467} = 1.9 \approx 2.0$
BG#1	5	2	2.5			
BG#2	3	2	1.5			
BG#3	4	2	2.0			
			average=2			
1	7	2	3.5	1.5	3.0	
2	5	2	2.5	.5	1.0	
3	3	2	1.5	-	-	
4	11	2	5.5	3.5	7.0	
5	7	2	3.5	1.5	3.0	
6	5	2	2.5	.5	1.0	
7	10	2	5.0	3.0	6.0	
8	6	2	3.0	1.0	2.0	
9	4	2	2.0	-	-	
10	11	2	5.5	3.5	7.0	
11	3	2	1.5	-	-	
12	8	2	4.0	2.0	4.0	
13	7	2	3.5	1.5	3.0	
14	5	2	2.5	.5	1.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π:Proportional (Windowless) Date of Counting 12/28/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
15	8	2	4.0	2.0	4.0	
16	6	2	3.0	1.0	2.0	
17	5	2	2.5	.5	1.0	
18	6	2	3.0	1.0	2.0	
19	4	2	2.0	-	-	
20	8	2	4.0	2.0	4.0	
21	2	2	1.0	-	-	
22	4	2	2.0	-	-	
23	9	2	4.5	2.5	5.0	
24	5	2	2.5	.5	1.0	
25	7	2	3.5	1.5	3.0	
STD#1	2876	2	-	-		Pu ²³⁹ (2914 dpm) dpm = 2914 cpm 1438 ≈ 2.0
BG#1	3	2	1.5			
BG#2	4	2	2.0			
BG#3	5	2	2.5			
			Av. = 2.0			
26	9	2	4.5	2.5	5.0	
27	10	2	5.0	3.0	6.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/28/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100. cm ²	REMARKS
28	12	2	6.0	4.0	8.0	
29	4	2	2.0	-	-	
30	3	2	1.5	-	-	
31	14	2	7.0	5.0	10.0	
32	12	2	6.0	4.0	8.0	
33	30	2	15.0	13.0	26.0	
34	7	2	3.5	1.5	3.0	
35	1	2	-	-	-	
36	8	2	4.0	2.0	4.0	
37	9	2	4.5	2.5	5.0	
38	5	2	2.5	.5	1.0	
39	6	2	3.0	1.0	2.0	
40	12	2	6.0	4.0	8.0	
41	3	2	1.5	-	-	
42	4	2	2.0	-	-	
43	6	2	3.0	1.0	2.0	
44	4	2	2.0	-	-	
45	7	2	3.5	1.5	3.0	
46	9	2	4.5	2.5	5.0	

SMEAR RESULTS

Location of Survey Sylcor Bulding #1 (1203 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} - R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
47	7	2	3.5	1.5	3.0	
48	13	2	6.5	4.5	9.0	
49	5	2	2.5	.5	1.0	
50	7	2	3.5	1.5	3.0	
STD#1	1523	/				Pu239(2914 dpm) $\frac{\text{dpm}}{\text{cpm}} = \frac{2914}{1523} = 1.9 \approx 2.0$
BG#1	3	2	1.5			
BG#2	7	2	3.5			
BG#3	3	2	1.5			
			Av. \approx 2.0			
51	5	2	2.5	.5	1.0	
52	17	2	8.5	6.5	13.0	
53	6	2	3.0	1.0	2.0	
54	4	2	2.0	-	-	
55	4	2	2.0	-	-	
56	11	2	5.5	3.5	7.0	
57	5	2	2.5	.5	1.0	
58	10	2	5.0	3.0	6.0	
59	8	2	4.0	2.0	4.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1203 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
60	7	2	3.5	1.5	3.0	
61	2	2	1.0	-	-	
62	8	2	4.0	2.0	4.0	
63	11	2	5.5	3.5	7.0	
64	16	2	8.0	6.0	12.0	
65	13	2	6.5	4.5	9.0	
66	7	2	3.5	1.5	3.0	
67	17	2	8.5	6.5	13.0	
68	13	2	6.5	4.5	9.0	
69	8	2	4.0	2.0	4.0	
70	14	2	7.0	5.0	10.0	
71	19	2	9.5	7.5	15.0	
72	22	2	11.0	9.0	18.0	
73	16	2	8.0	6.0	12.0	
74	11	2	5.5	3.5	7.0	
75	5	2	2.5	.5	1.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ (2014 dpm)
STD#1	2649	2				$\frac{\text{dpm}}{\text{cpm}} = \frac{2914}{1348} \approx 2.0$
BG#1	4	2	2.0			
BG#2	3	2	1.5			
BG#3	4	2	2.0			
			Av. \approx 2.0			
76	11	2	5.5	3.5	7.0	
77	8	2	4.0	2.0	4.0	
78	19	2	9.5	7.5	15.0	
79	12	2	6.0	4.0	8.0	
80	7	2	3.5	1.5	3.0	
81	9	2	4.5	2.5	5.0	
82	7	2	3.5	1.5	3.0	
83	8	2	4.0	2.0	4.0	
84	9	2	4.5	2.5	5.0	
85	6	2	3.0	1.0	2.0	
86	3	2	1.5	-	-	
87	10	2	5.0	3.0	6.0	
88	7	2	3.5	1.5	3.0	
89	4	2	2.0	-	-	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
90	7	2	3.5	1.5	3.0	
91	8	2	4.0	2.0	4.0	
92	14	2	7.0	5.0	10.0	
93	17	2	8.5	6.5	13.0	
94	11	2	5.5	3.5	7.0	
95	9	2	4.5	2.5	5.0	
96	22	2	11.0	9.0	18.0	
97	8	2	4.0	2.0	4.0	
98	6	2	3.0	1.0	2.0	
99	11	2	5.5	3.5	7.0	
100	12	2	6.0	4.0	8.0	
101	7	2	3.5	1.5	3.0	
102	8	2	4.0	2.0	4.0	
103	5	2	2.5	.5	1.0	
104	14	2	7.0	5.0	10.0	
105	8	2	4.0	2.0	4.0	
106	5	2	2.5	.5	1.0	

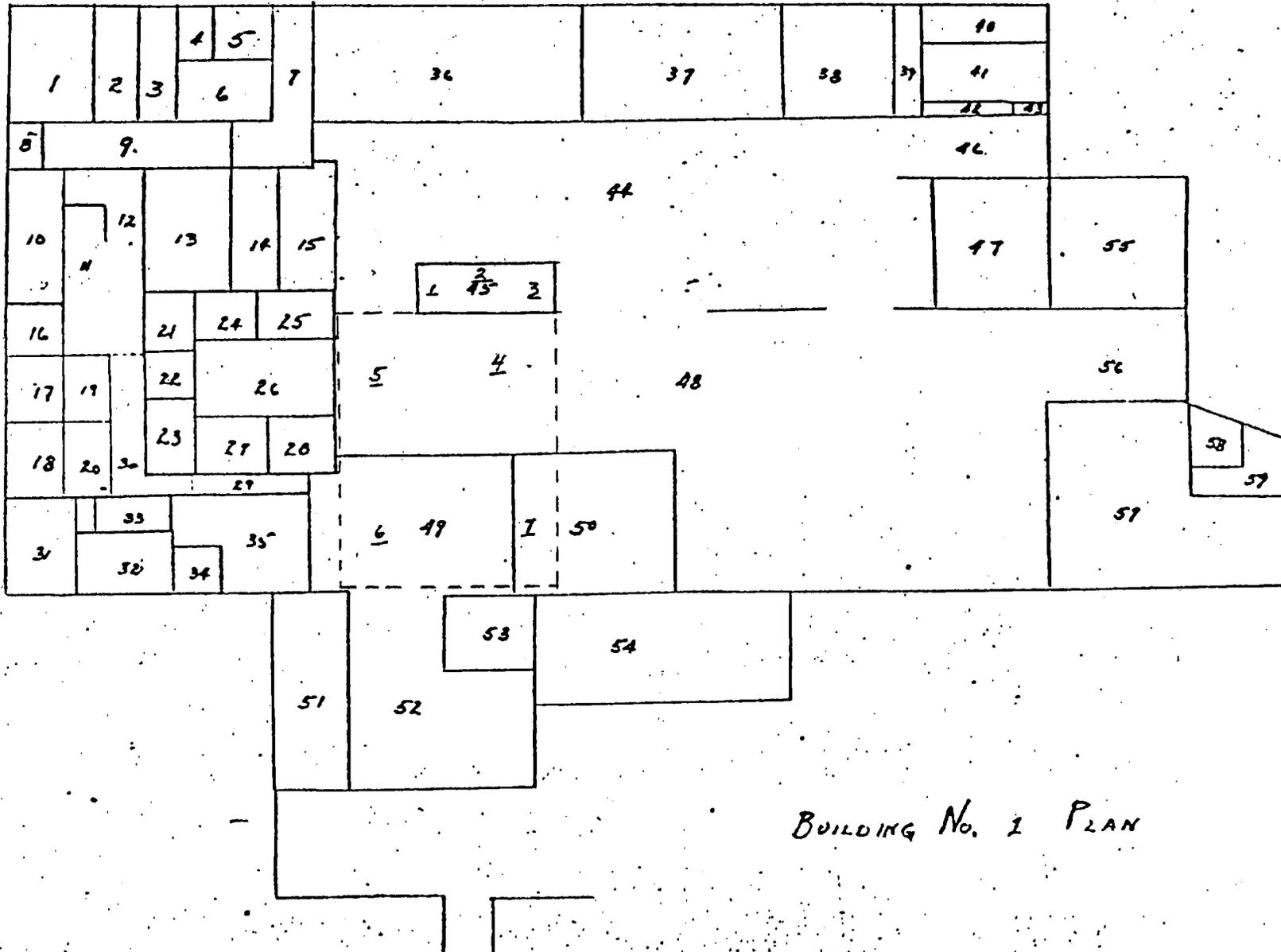
SMEAR SURVEY

DATE OF SURVEY: 27 DEC 1965

LOCATION: STAIRS, ROOM OVER PLATING AREA (ROOMS 49, 52 AND 53) AND ROOF

SMEAR NOS.: UNDERLINED NOS.

ALL AREAS WERE CHECKED ON ROOF WITH AN EBERLINE INSTRUMENT CORP. PAC-3G WITH ALPHA PROBE AND FOUND TO BE LESS THAN 50 CPM.



A-1-17

BUILDING No. 1 PLAN

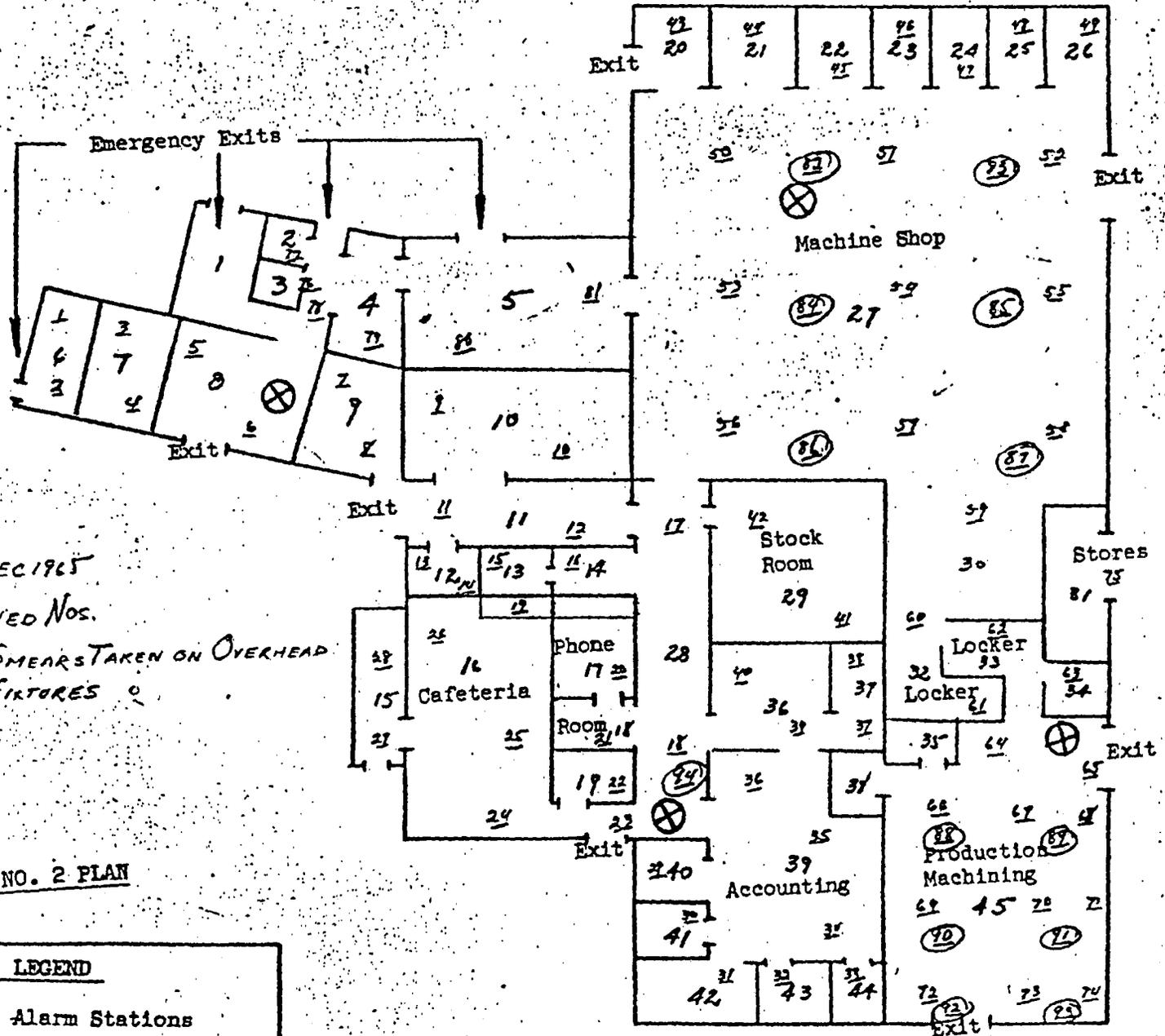
A-1-20

SMEAR SURVEY
 DATE OF SURVEY: 27 DEC 1965
 SMEAR NOS.: UNDERLINED NOS.
 SMEAR NOS. CIRCLED: SMEARS TAKEN ON OVERHEAD
 FIXTURES

BUILDING NO. 2 PLAN

LEGEND

⊗ Fire Alarm Stations



SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65
 Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ :2914 dpm
STD#1	2836	2	1418			$\frac{\text{dpm}}{\text{cpm}} = \frac{2914}{1418} = 2.05 \approx 2.0$
BG#1	4	2	2.0			
BG#2	3	2	1.5			
BG#3	3	2	1.5	1.7 Avg.		
1	30	2	15.0	13.3	26.6	
2	39	2	19.5	17.8	35.6	
3	6	2	3.0	1.3	2.6	
4	7	2	3.5	1.8	3.6	
5	6	2	3.0	1.3	2.6	
6	21	2	10.5	8.8	17.6	
7	11	2	5.5	3.8	7.6	
8	3	2	1.5	-	-	
9	7	2	3.5	1.8	3.6	
10	3	2	1.5	-	-	
11	3	2	1.5	-	-	
12	8	2	4.0	2.3	4.6	
13	4	2	2.0	0.3	0.6	
14	11	2	5.5	3.8	7.6	
15	7	2	3.5	1.8	3.6	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π : Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
16	3	2	1.5	-	-	
17	6	2	3.0	1.3	2.6	
18	9	2	4.5	2.8	5.6	
19	9	2	4.5	2.8	5.6	
20	6	2	3.0	1.3	2.6	
21	6	2	3.0	1.3	2.6	
22	9	2	4.5	2.8	5.6	
23	2	2	1.0	-	-	
24	5	2	2.5	0.8	1.6	
25	4	2	2.0	0.3	0.6	
26	10	2	5.0	3.3	6.6	
27	6	2	3.0	1.3	2.6	
28	7	2	3.5	1.8	3.6	
29	5	2	2.5	0.8	1.6	
30	5	2	2.5	0.8	1.6	
31	3	2	1.5	-	-	
32	5	2	2.5	0.8	1.6	
33	2	2	1.0	-	-	
34	1	2	0.5	-	-	

SMEAR RESULTS

Location of Survey Sylcor: Building #2 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
35	2	2	1.0	-	-	
36	9	2	4.5	2.8	5.6	
37	2	2	1.0	-	-	
38	7	2	3.5	1.8	3.6	
39	14	2	7.0	5.3	10.6	
40	3	2	1.5	-	-	
41	12	2	6.0	4.3	8.6	
42	3	2	1.5	-	-	
43	9	2	4.5	2.8	5.6	
44	6	2	3.0	1.3	2.6	
45	8	2	4.0	2.3	4.6	
46	10	2	5.0	3.3	6.6	
47	11	2	5.5	3.8	7.6	
48	15	2	7.5	5.8	11.6	
49	14	2	7.0	5.3	10.6	
50	8	2	4.0	2.3	4.6	
51	10	2	5.0	3.3	6.6	
52	5	2	2.5	0.8	1.6	
53	13	2	6.5	4.8	9.6	

SMEAR RESULTS

Location of Survey Sylcor Building #2:(1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π:Proportional (Windowless) Date of Counting 12/29/65
 Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
54	6	2	3.0	1.3	2.6	
55	8	2	4.0	2.3	4.6	
56	17	2	8.5	6.8	13.6	
57	5	2	2.5	0.8	1.6	
58	6	2	3.0	1.3	2.6	
59	8	2	4.0	2.3	4.6	
60	9	2	4.5	2.8	5.6	
61	3	2	1.5	-	-	
62	22	2	11.0	9.3	18.6	
63	10	2	5.0	3.3	6.6	
64	2	2	1.0	-	-	
65	4	2	2.0	0.3	0.6	
66	8	2	4.0	2.3	4.6	
67	3	2	1.5	-	-	
68	9	2	4.5	2.8	5.6	
69	8	2	4.0	2.3	4.6	
70	4	2	2.0	0.3	0.6	
71	1	2	0.5	-	-	
72	3	2	1.5	-	-	

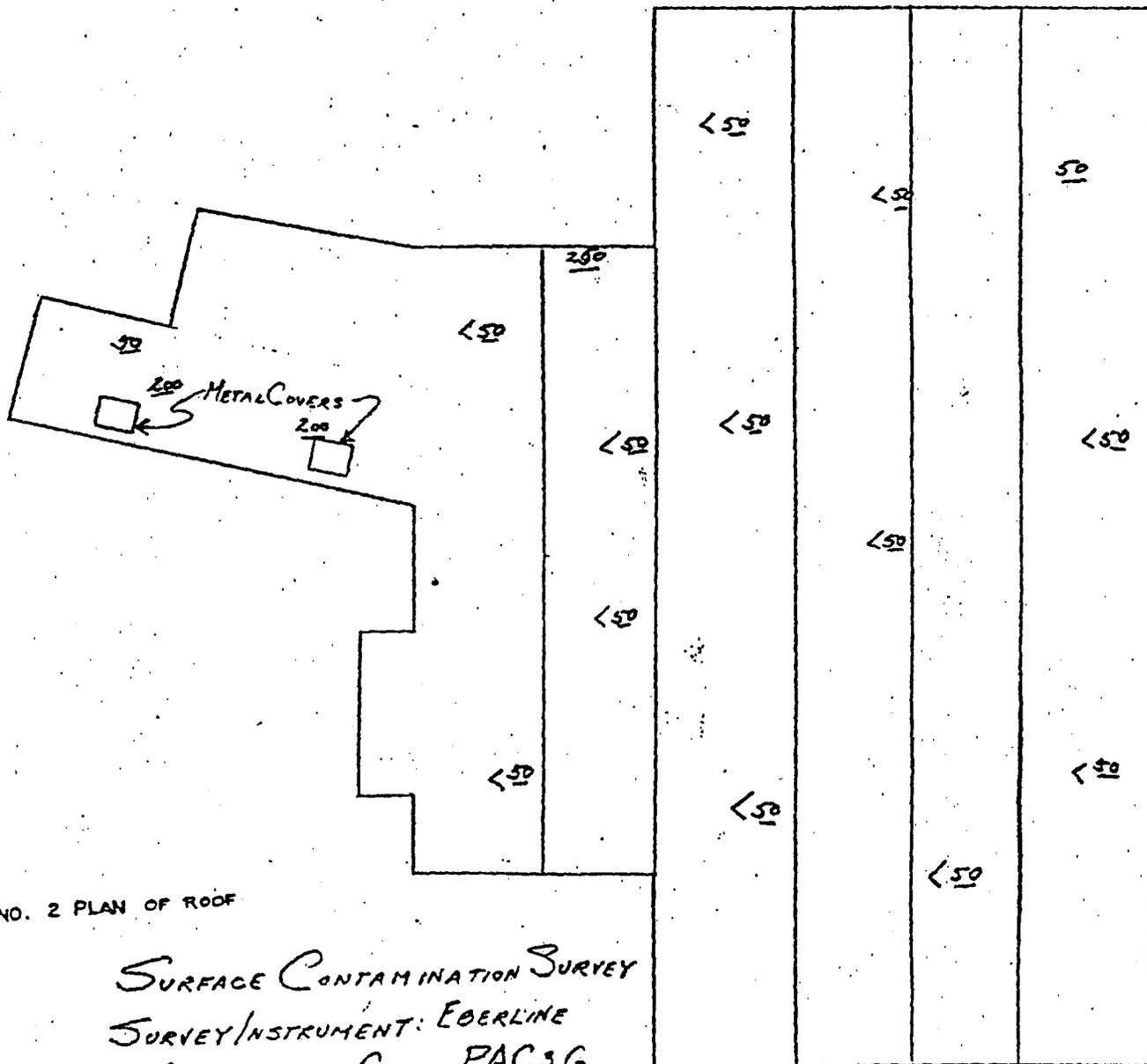
SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/31/65
 Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ : 2914 dpm
ST#1	2824	2	1412	1411		$\frac{\text{dpm} = 2914}{\text{cpm} = 1411} = 2.06 \approx 2.0$
BG#1	2	2	1.0			
BG#2	1	2	0.5			
BG#3	2	2	1.0	0.8 Avg.		
73	4	2	2.0	1.2	2.4	
74	2	2	1.0	0.2	0.4	
75	15	2	7.5	6.7	13.4	
76	6	2	3.0	2.2	4.4	
77	10	2	5.0	4.2	8.4	
78	13	2	6.5	5.7	11.4	
79	19	2	9.5	8.7	17.4	
80	10	2	5.0	4.2	8.4	
81	15	2	7.5	6.7	13.4	
82	31	2	15.5	14.7	29.5	
83	16	2	8.0	7.2	14.4	
84	21	2	10.5	9.7	19.4	
85	9	2	4.5	3.7	7.4	
86	8	2	4.0	3.2	6.4	
87	22	2	11.0	10.2	20.4	

A D D E N D U M

- I. Roof Survey
- II. Specific Chemical Analysis of Soil and Water Samples for Uranium



BUILDING NO. 2 PLAN OF ROOF

SURFACE CONTAMINATION SURVEY

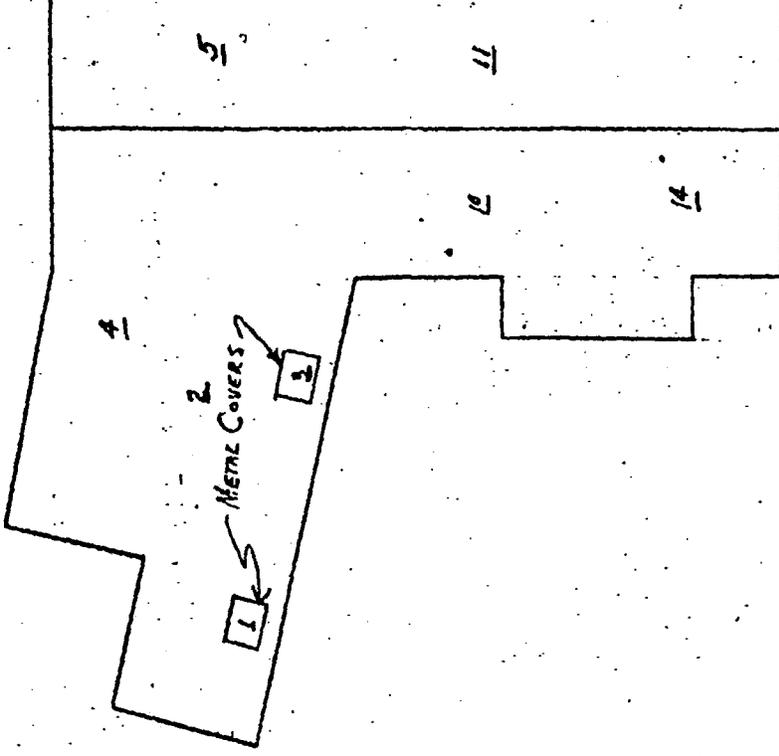
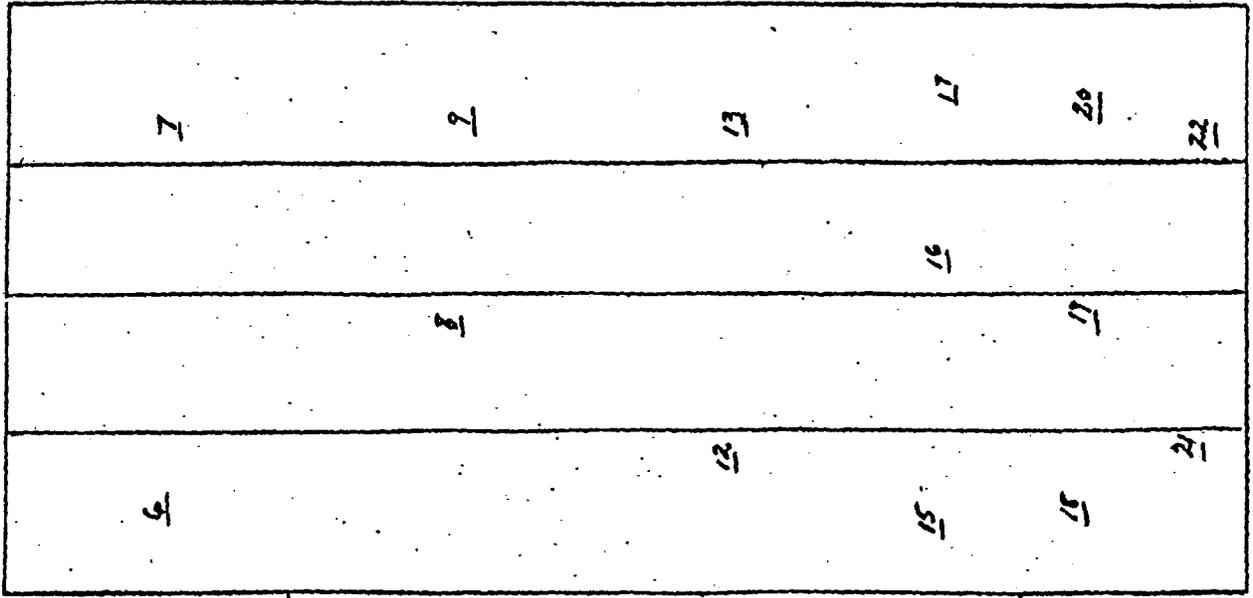
SURVEY INSTRUMENT: EBERLINE

INSTRUMENT CORP.: PAC 3 G
WITH ALPHA PROBE

INSTRUMENT CALIBRATION 550 CPM ~ 2000 $\frac{dpm}{100\text{ CM}^2}$

ALL UNDERLINED READINGS IN CPM

DATE OF SURVEY: 4 JAN 1966



BUILDING NO. 2 PLAN

SHEAR SURVEY ON ROOF OF
BLDG. NO. 2 : 1-22

DATE OF SURVEY 4 JAN. 1966

SHEAR NOS.: UNDERLINED NOS.

SMEAR RESULTS

Location of Survey Sylcor: 1293 Area :Roof of Bldg. #2 Date of Survey 4 January 1966

Counting Instrument RIDL 2π:Proportional (Windowless) Date of Counting 7 January 1966

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
STD #1	2920	2	1460	1458		Fu ²³⁹ :2914 dpm dpm/cpm =2914/1458 ~2.0
BG#3	4	2	2.0			
BG#1	4	2	2.0			
BG#2	2	2	1.0	1.7 avg.		
1	7	2	3.5	1.8	3.6	
2	6	2	3.0	1.3	2.6	
3	3	2	1.5	-	-	
4	2	2	1.0	-	-	
5	8	2	4.0	2.3	4.6	
6	3	2	1.5	-	-	
7	1	2	0.5	-	-	
8	3	2	1.5	-	-	
9	3	2	1.5	-	-	
10	1	2	0.5	-	-	
11	6	2	3.0	1.3	2.6	
12	3	2	1.5	-	-	
13	0	2	-	-	-	
14	2	2	1.0	-	-	
15	2	2	1.0	-	-	

Parking Field #1

Parking Field #3

Bldg. 5

CORP

AE

Parking Field #2

3

Bldg. 10

11 15

12

13

14

Bldg. 4

9

Bldg. 2

SUMP DRY

8

Bldg. 6

Bldg. 7

1293 AREA

H₂O LEVEL

H₂O LEVEL

SUMP #1

SUMP #2

MUSTER AREA

-  CPP COMMERCIAL FACILITIES
-  CORP CORPORATE FACILITIES
-  AEC AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SPECIFIC CHEMICAL ANALYSIS
of SOIL AND SUMP H₂O SAMPLES
FOR URANIUM BY FLUORIMETRY

DATE SAMPLES COLLECTED: 6 JAN 1966

WATER AND SOIL SAMPLE RESULTS

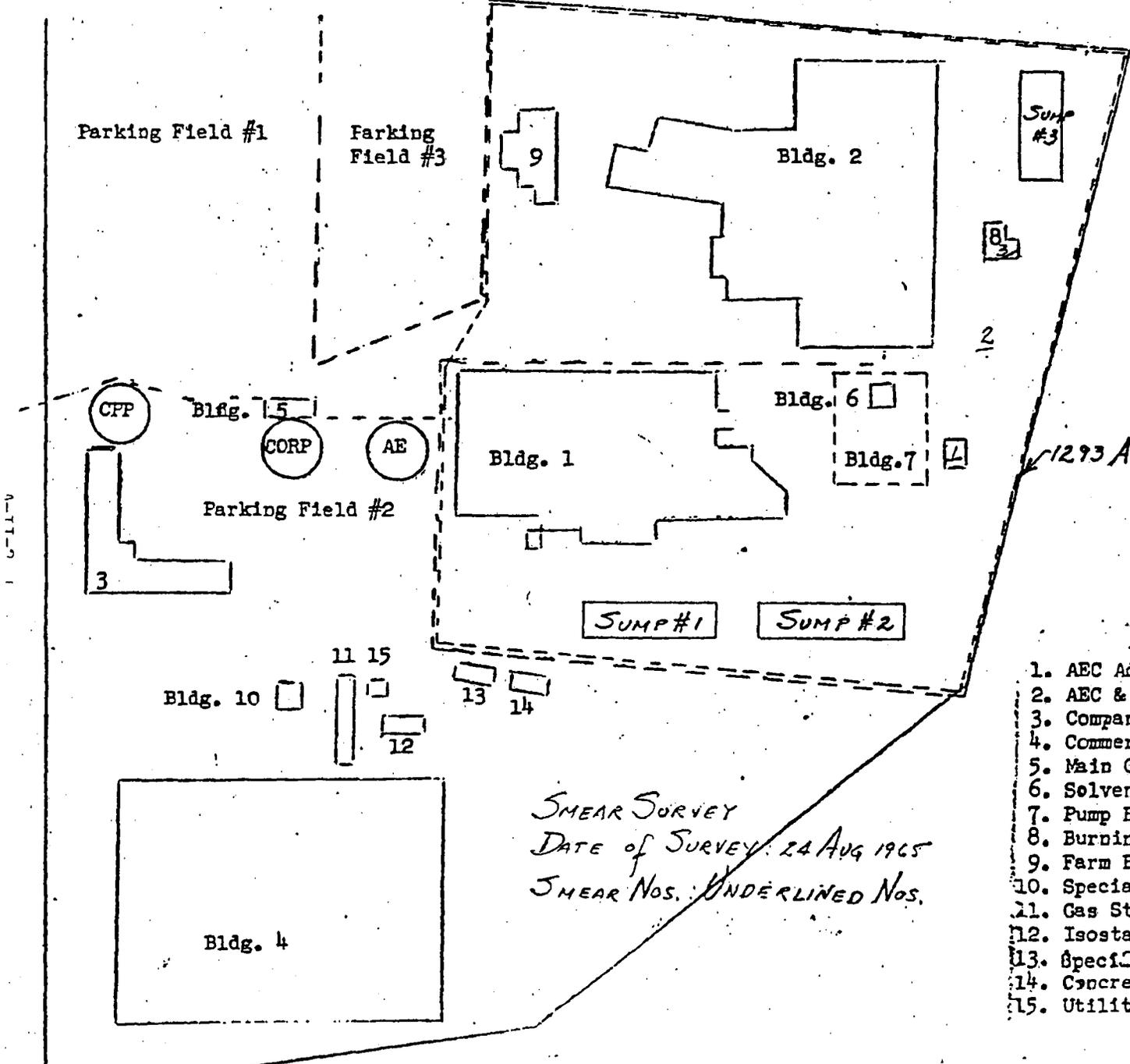
Sample Number	Weight of Sample (Grams)	Volume of Sample (ml)	Activity ¹ picocurie gram or ml	% of MPC Gen. pop. ($\frac{x}{20 \text{ pc/ml}}$)
Soil #1	8.1855		49.1	
Soil #2	NOT ANALYZED			
Soil #3	8.5960		66.0	
Soil #4	11.0558		15.0	
Soil #5	14.5939		126	
Soil #6	27.1072		74.7	
H ₂ O Sump #1		440	0.058	0.29
H ₂ O Sump #2		546	0.103	0.52
H ₂ O Sump #3			0.284	1.42) ²
Tap Water		163	< 0.01	

¹ Estimated standard error \pm 20%.

² Estimation based on relation between water and soil activity in sumps 1 & 2.

APPENDIX II

Pre-Decontamination Surveys



MUSTER AREA

- CPP COMMERCIAL FACILITIES
- CORP CORPORATE FACILITIES
- AEC AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SMEAR SURVEY
 DATE of SURVEY: 24 AUG 1965
 SMEAR NOS. UNDERLINED NOS.

A-11-4

Parking Field #1

Parking Field #3

Bldg. 5

CORP

AE

Parking Field #2

3

Bldg. 10

11 15

12

13

14

Bldg. 4



Bldg. 2

Sump #3

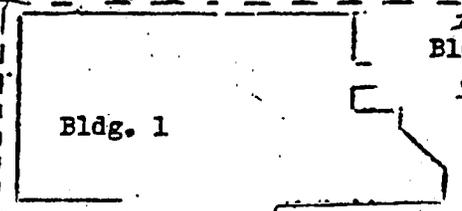
13

12

8

10

2



Bldg. 1

Bldg. 6

Bldg. 7

2

5

5

1

2

3

4

SUMP #1

SUMP #2

1293 AREA

MUSTER AREA



COMMERCIAL FACILITIES



CORPORATE FACILITIES



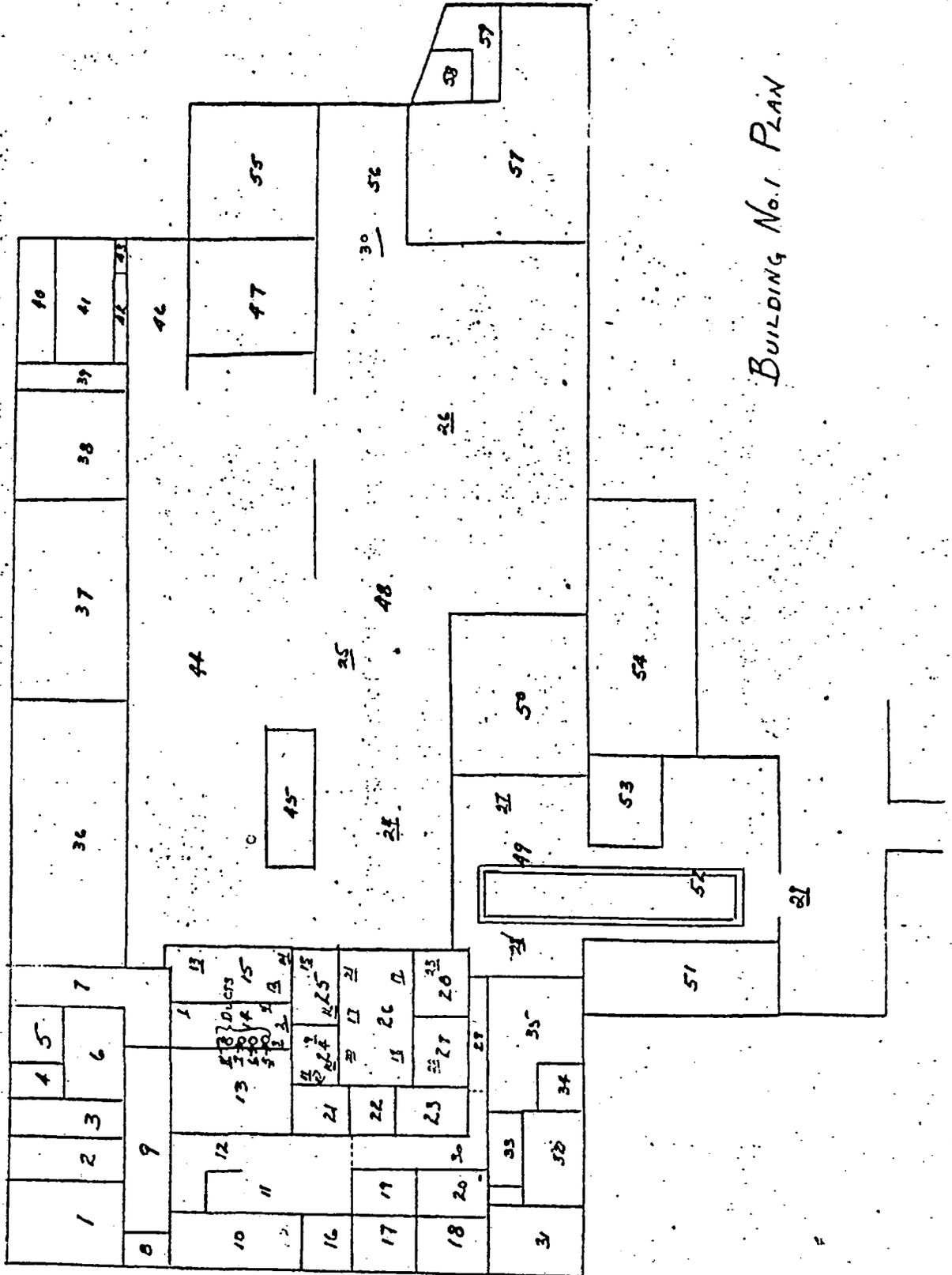
AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SMEAR SURVEY
 DATE OF SURVEY: 5 OCT 1965
 SMEAR NOS.: UNDERLINED NOS.

SMEAR SURVEY
 DATE OF SURVEY: 24 AUG 1965
 SMEAR NOS.: UNDERLINED NOS.



BUILDING No. 1 PLAN

SMEAR RESULTS

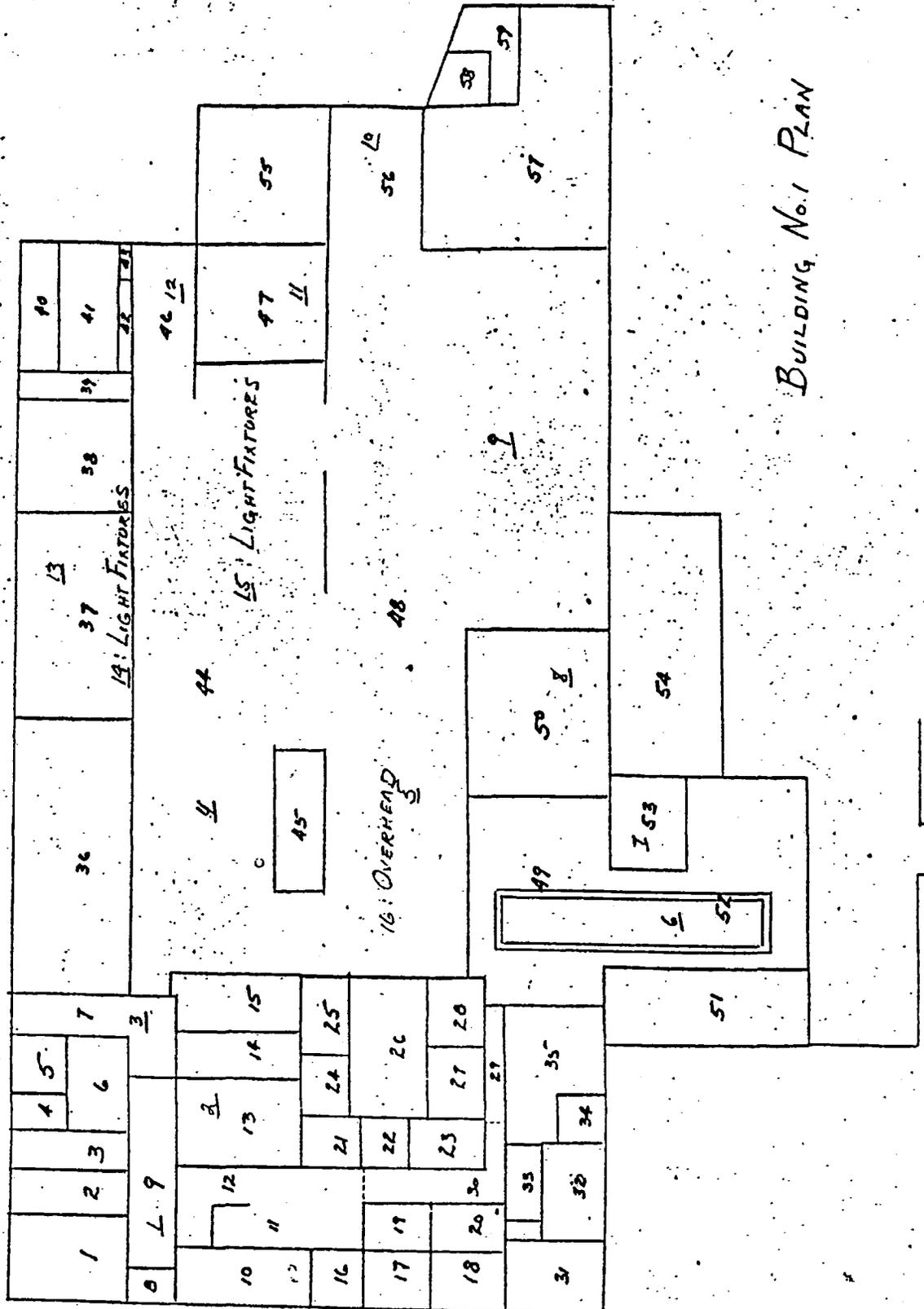
Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 24 August 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting _____

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG	3	10	0.3			
1	124	1	124		248	
2	94	1	94		188	
3	58	1	58		116	
4	83	1	83		166	
5	314	1	314		628	
6	227	1	227		454	
7	437	1	437		874	
8	852	1	852		1704	
9	113	1	113		226	
10	44	1	44		88	
11	110	1	110		220	
12	48	1	48		96	
13	123	1	123		246	
14	72	1	72		144	
15	58	1	58		116	
16	66	1	66		132	
17	62	1	62		124	
18	54	1	54		108	

SMEAR SURVEY
 DATE OF SURVEY: 5 OCT. 1965
 SMEAR NOS.: UNDERLINED NOS.



BUILDING No. 1 PLAN

SMEAR RESULTS

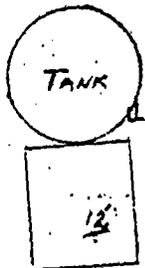
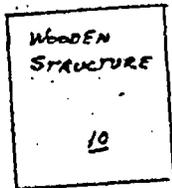
Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 5 October 1965

Counting Instrument RIDL 2 π : Proportional (Windowless) Date of Counting 7 October 1965

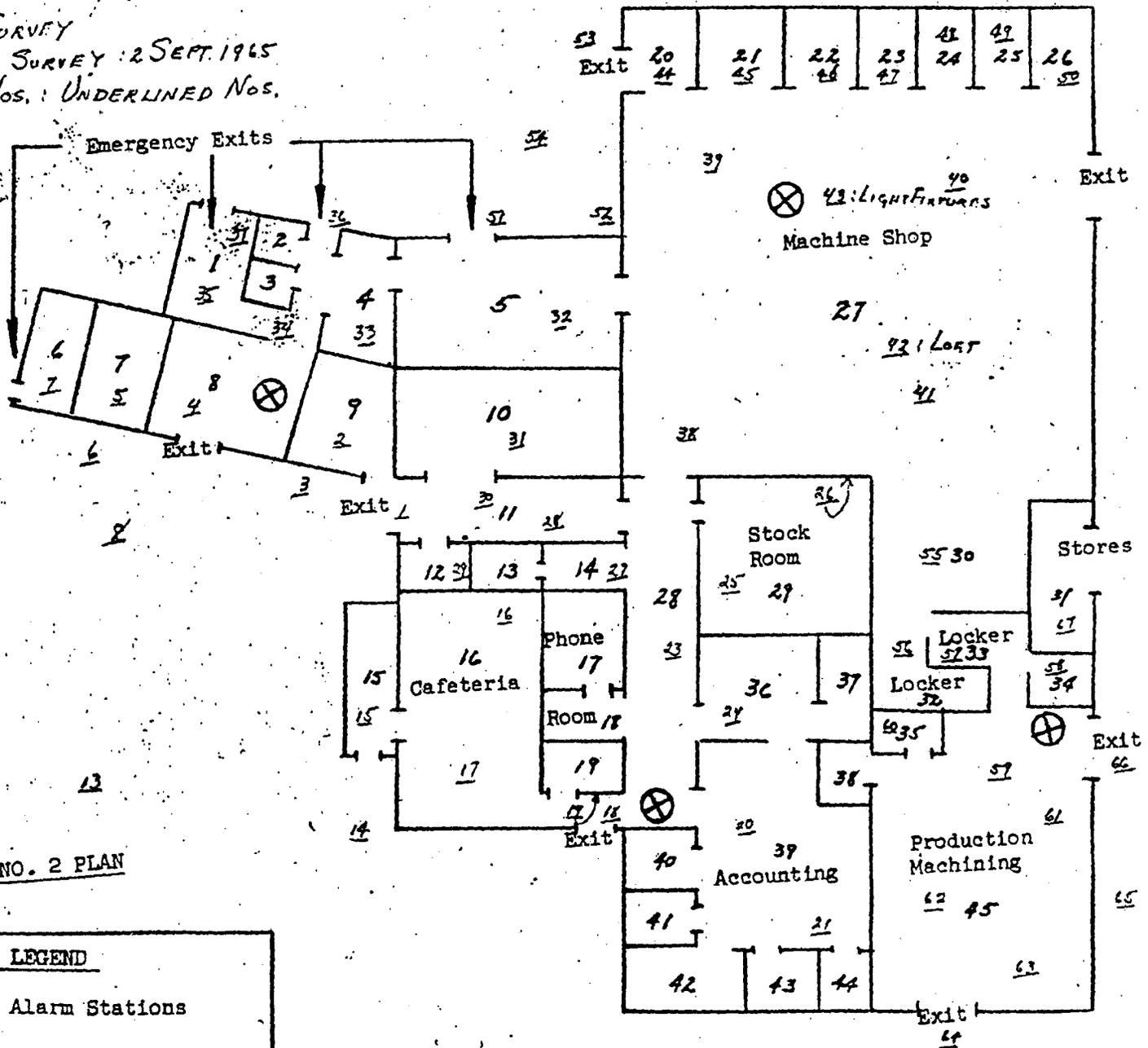
Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
1	2	2	1.0	-	-	
2	3	2	1.5	0.5	1.0	
3	3	2	1.5	0.5	1.0	
4	7	2	3.5	2.5	5.0	
5	9	2	4.5	3.5	7.0	
6	16	2	8.0	7.0	14.0	
7	10	2	5.0	4.0	8.0	
8	14	2	7.0	6.0	12.0	
9	6	2	3.0	2.0	4.0	
10	1	2	0.5	-	-	
11	5	2	2.5	1.5	3.0	
12	4	2	2.0	1.0	2.0	
13	3	2	1.5	0.5	1.0	
14	4	2	2.0	1.0	2.0	
15	5	2	2.5	1.5	3.0	
16	11	2	5.5	4.5	9.0	

SMEAR SURVEY
 DATE of SURVEY: 2 SEPT. 1965
 SMEAR NOS.: UNDERLINED NOS.



A-II-II



BUILDING NO. 2 PLAN

LEGEND

⊗ Fire Alarm Stations

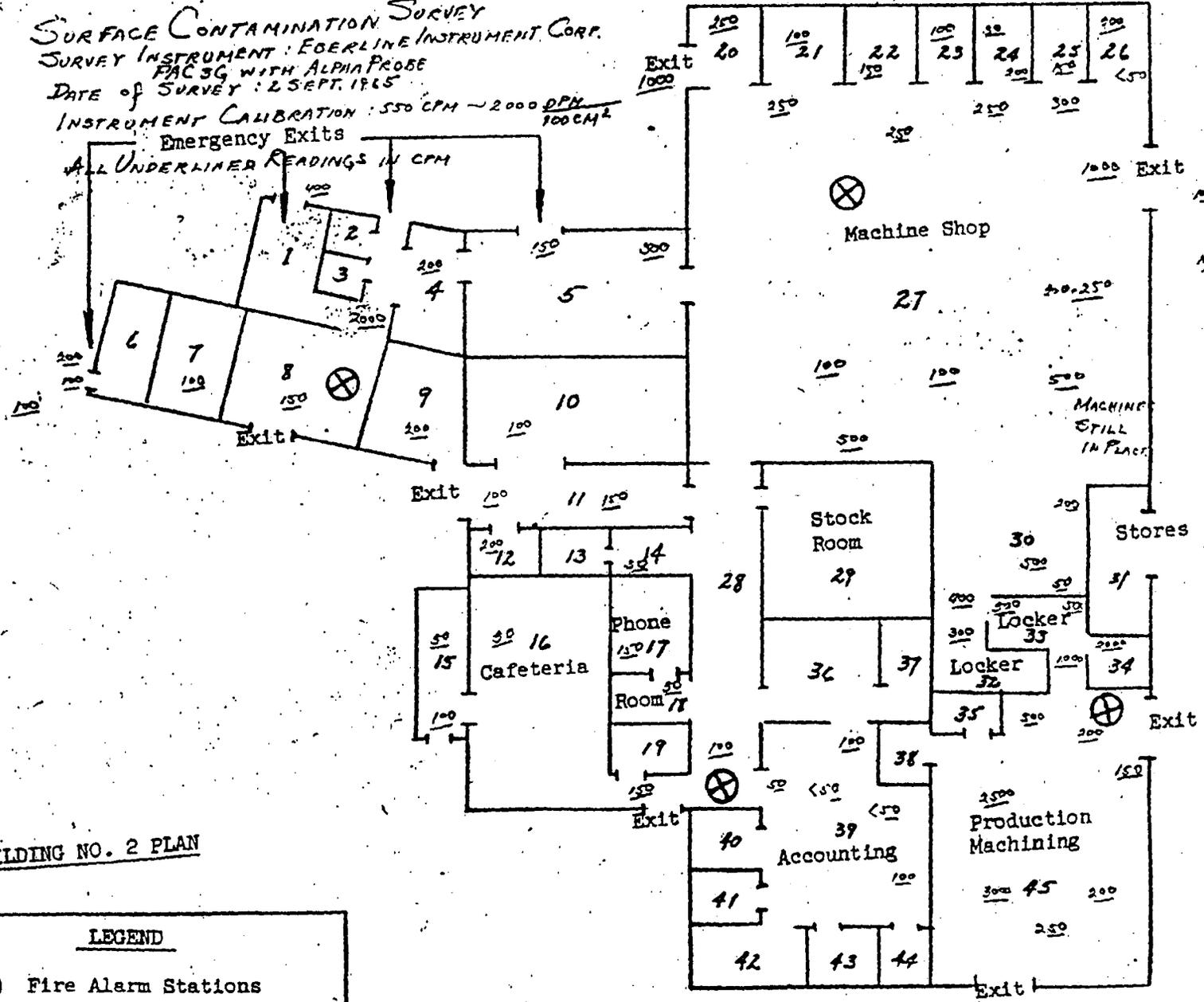
SURFACE CONTAMINATION SURVEY
 SURVEY INSTRUMENT: EBERLINE INSTRUMENT CORP.
 PAC 36 WITH ALPHA PROBE
 DATE OF SURVEY: 2 SEPT. 1965
 INSTRUMENT CALIBRATION: 550 CPM ~ 2000 DPM
 100 CM²

Emergency Exits

ALL UNDERLINED READINGS IN CPM

WOODEN
STRUCTURE
300
150 130

TANK



BUILDING NO. 2 PLAN

LEGEND
 ⊗ Fire Alarm Stations

A-II-12

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 2 September 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 2 September 1965

Person Doing Survey F.J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
BG	25	137	0.18			
1	39	1	39		78	
2	36	1	36		72	
3	31	1	31		62	
4	28	1	28		56	
5	20	1	20		40	
6	36	1	36		72	
7	NOT APPLICABLE					
8	20	1	20		40	
9	9	1	9		18	
10	26	1	26		52	
11	31	1	31		62	
12	25	1	25		50	
13	21	1	21		42	
14	23	1	23		46	
15	25	1	25		50	
16	25	1	25		50	
17	21	1	21		42	
18	23	1	23		46	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1203 Area) Date of Survey 2 September 1965

Counting Instrument RIDL:2π Proportional (Windowless) Date of Counting 2 September 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
19	21	1	21		42	
20	21	1	21		42	
21	18	1	18		36	
22	29	1	29		58	
23	19	1	19		38	
24	21	1	21		42	
25	28	1	28		56	
26	26	1	26		52	
27	22	1	22		44	
28	18	1	18		36	
29	33	1	33		66	
30	24	1	24		48	
31	30	1	30		60	
32	16	1	16		32	
33	24	1	24		48	
34	28	1	28		56	
35	NOT APPLICABLE					
36	18	1	18		36	
37	NOT APPLICABLE					

SMEAR RESULTS

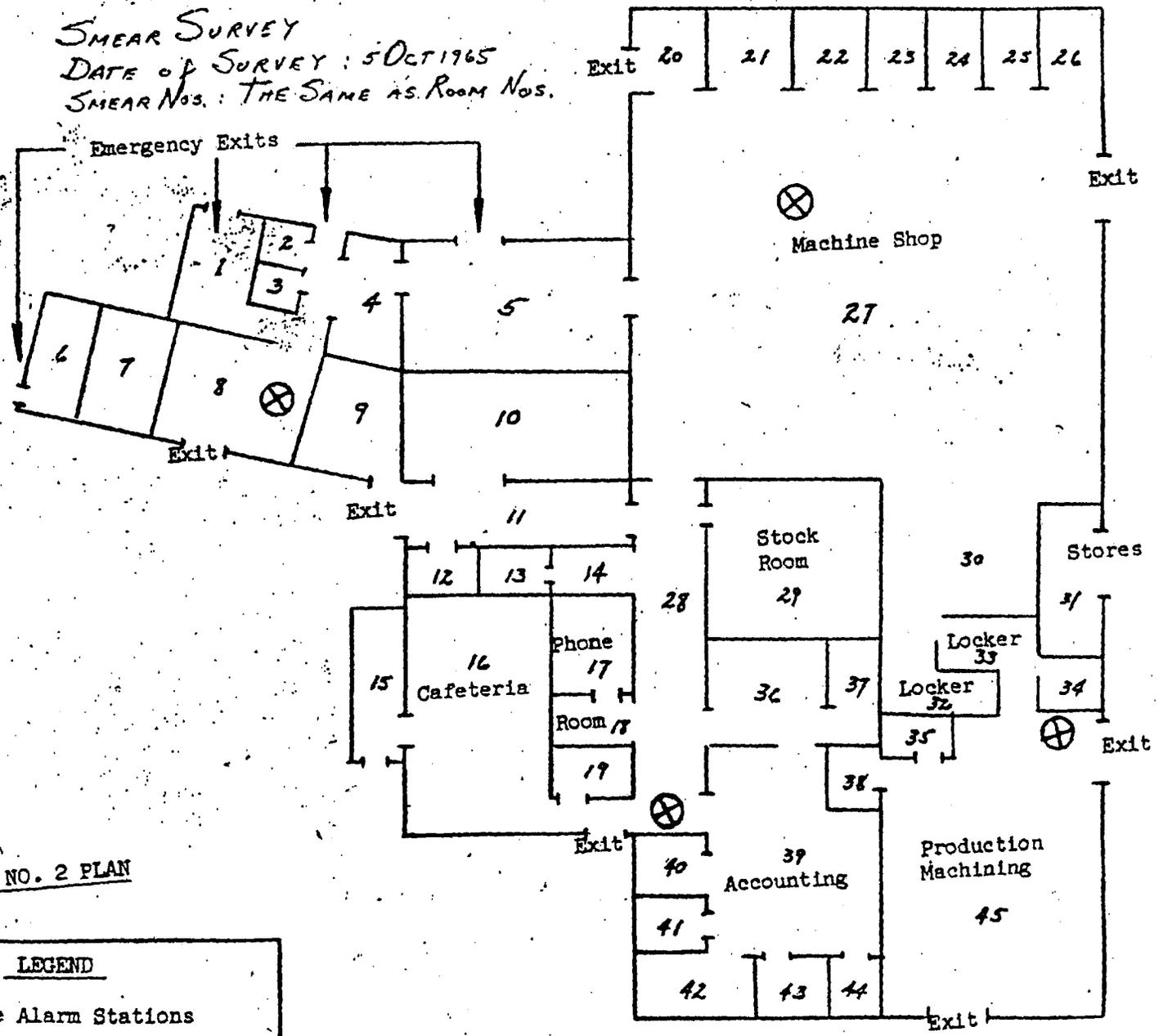
Location of Survey Sylcor Building #2 (Area 1293) Date of Survey 2 September 1965

Counting Instrument RIDL: 2 π Proportional (Windowless) Date of Counting 2 September 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG	2	2	1.0			
BG	6	5	1.2			
38	7	1	7	6	12	
39	0	1	-	-	-	
40	12	1	12	11	22	
41	12	1	12	11	22	
42	8	1	8	7	14	
43	5	1	5	4	8	
44	6	1	6	5	10	
45	9	1	9	8	16	
46	5	1	5	4	8	
47	5	1	5	4	8	
48	8	1	8	7	14	
49	8	1	8	7	14	
50	10	1	10	9	18	
51	2	1	2	1	2	
52	1	1	1	-	-	
53	1	1	1	-	-	
54	NOT COUNTED					

SMEAR SURVEY
 DATE OF SURVEY: 5 OCT 1965
 SMEAR NOS.: THE SAME AS ROOM NOS.



BUILDING NO. 2 PLAN

LEGEND

⊗ Fire Alarm Stations

A-11-17

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 5 October 1965

Counting Instrument RIDL: 2π Proportional (Windowless) Date of Counting 7 October 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
1	NOT	APPLICABLE				
2	43	5	8.6	7.6	15.2	
3	57	5	11.4	10.4	20.8	
4	125	5	25.0	24.0	48.0	
5	48	5	9.6	8.6	17.2	
6	NOT	APPLICABLE				
7	NO SMEARS		TAKEN			
8	NO SMEARS		TAKEN			
9	NO SMEARS		TAKEN			
10	82	5	16.4	15.4	30.8	
11	15	5	3.0	2.0	4.0	
12	14	5	2.8	1.8	3.6	
13	20	5	4.0	3.0	6.0	
14	22	5	4.4	3.4	6.8	
15	17	5	3.4	2.4	4.8	
16	17	5	3.4	2.4	4.8	
17	58	5	10.6	9.6	19.2	
18	39	5	7.8	6.8	13.6	
19	14	5	2.8	1.8	3.6	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Contt. Date of Survey 5 October 1965

Counting Instrument RIDL:2π Proportional (Windowless) Date of Counting 7 October 1965

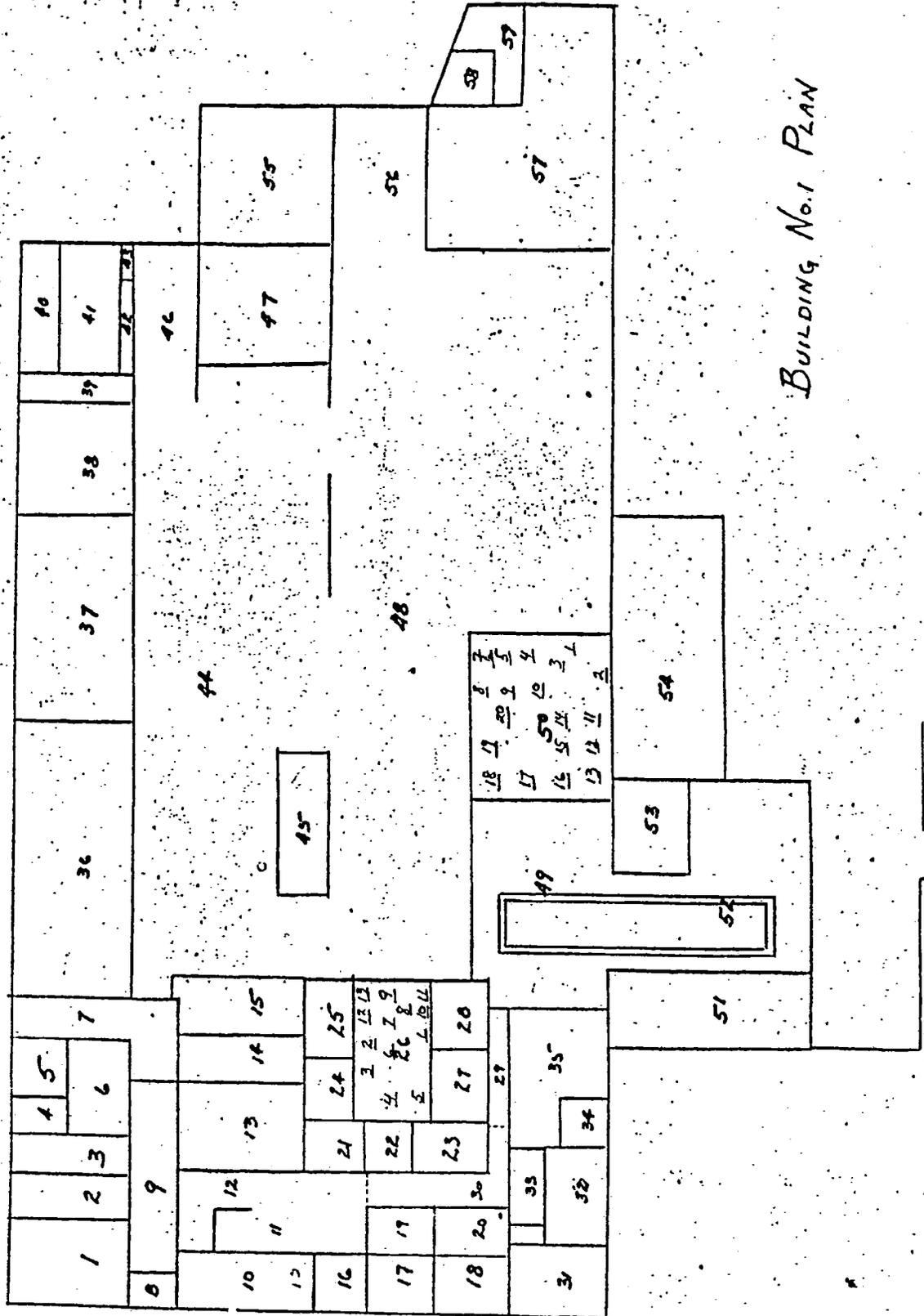
Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
20	22	5	4.4	3.4	6.8	
21	10	2	5.0	4.0	8.0	
22	17	2	8.5	7.5	15.0	
23	23	2	11.5	10.5	21.0	
24	30	2	15.0	14.0	28.0	
25	61	2	30.5	29.5	59.0	
26	50	2	25.0	24.0	48.0	
27	25	2	12.5	11.5	23.0	
28	44	2	22.0	21.0	42.0	
29	30	2	15.0	14.0	28.0	
30	12	2	6.0	5.0	10.0	
31	36	2	12.0	11.0	22.0	
32	108	2	54.0	53.0	106.0	
33	50	2	25.0	24.0	48.0	
34	396	2	198.0	197.0	394.0	
35	15	2	7.5	6.5	13.0	
36	9	2	4.5	3.5	7.0	
37	NO SMEAR TAKEN					
38	185	2	92.5	91.5	183.0	

APPENDIX III

Intermediate Smear Surveys

SMEAR SURVEY
 DATE OF SURVEY: 21 OCT 1965
 SMEAR NOS. UNDERLINED NOS.
 SMEARS TAKEN AFTER 1st SCRUB - WASH



BUILDING No. 1 PLAN

SMEAR RESULTS

Location of Survey Sylcor Building #1, Room 26 Date of Survey 27 October 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 27 October 1965

Person Doing Survey J.V. Tekin Person Doing Counting D. C. Bogen

After First Scrub Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
BG.						1.0 avg.
1	1	2	0.5	-	-	
2	2	2	1.0	-	-	
3	19	5	3.8	2.8	5.6	
4	9	2	4.5	3.5	7.0	
5	1	2	0.5	-	-	
6	5	2	2.5	1.5	3.0	
7	7	2	3.5	2.5	5.0	
8	12	2	6.0	5.0	10.0	
9	5	2	2.5	1.5	3.0	
10	1	2	0.5	-	-	
11	3	2	1.5	0.5	1.0	
12	8	2	4.0	3.0	6.0	
13	3	2	1.5	0.5	1.0	
14	4	2	2.0	1.0	2.0	Overhead light fixtures
15	10	2	5.0	4.0	8.0	" " "
16	2	2	1.0	-	-	" " "
17	9	2	4.5	3.5	7.0	" " "
18	9	2	4.5	3.5	7.0	Wall molding, left side

SMEAR RESULTS

Location of Survey Sylcor Building #1 Room #50 Date of Survey 28 October 1965

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 28 October 1965

Person Doing Survey J. V. Tekin Person Doing Counting J. V. Tekin

After First Scrub Wash

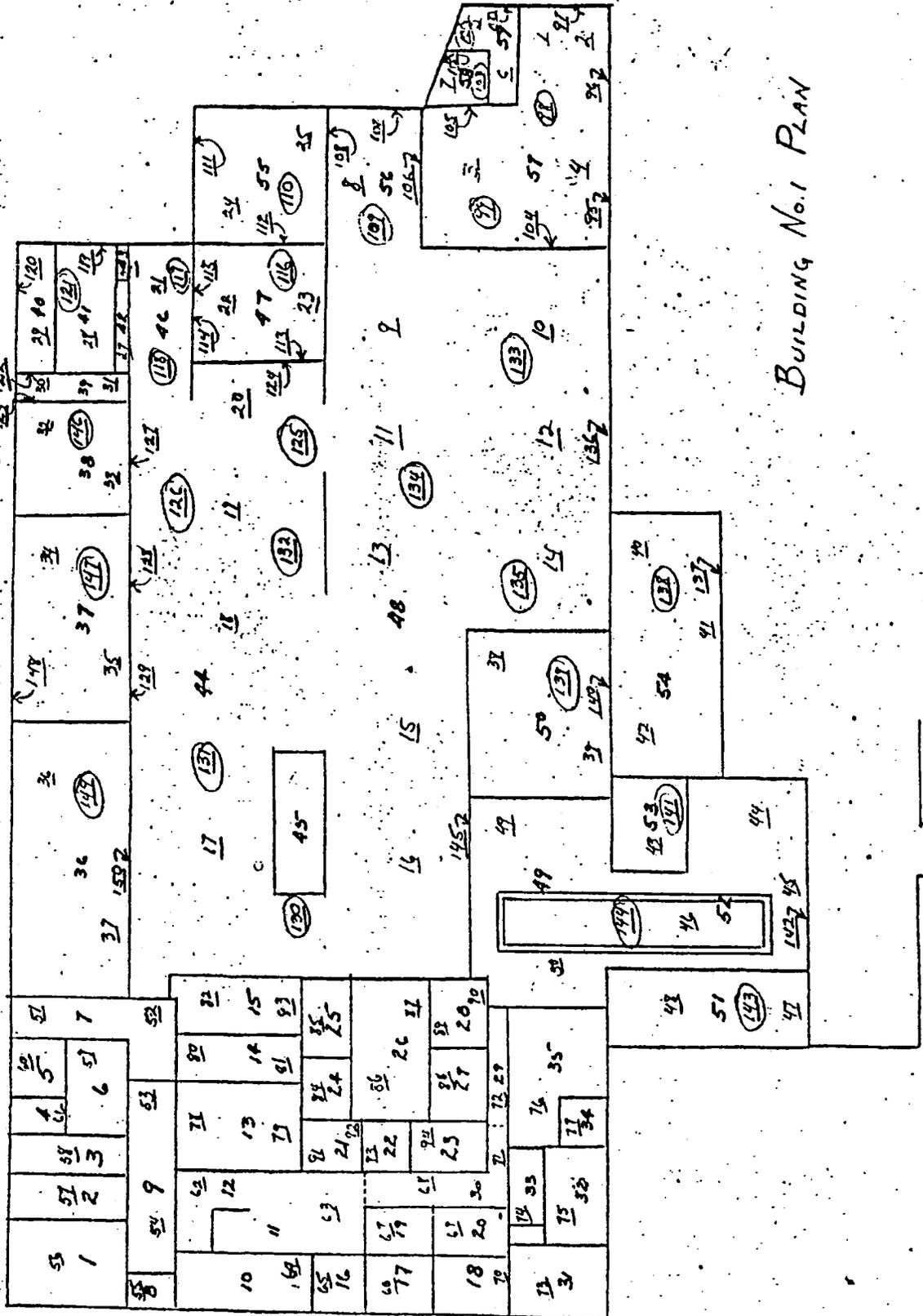
SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG						1.0 avg.
1	3	2	1.5	0.5	1.0	
2	16	2	8.0	7.0	14.0	
3	9	2	4.5	3.5	7.0	
4	12	2	6.0	5.0	10.0	
5	8	2	4.0	3.0	6.0	
6	8	2	4.0	3.0	6.0	
7	2	2	1.0	-	-	
8	16	4	4.0	3.0	6.0	
9	15	6	5.0	4.0	8.0	
10	28	6	4.6	3.6	7.2	
11	11	4	2.7	1.7	3.4	
12	6	2	3.0	2.0	4.0	
13	13	3	4.3	3.3	6.6	
14	10	2	5.0	4.0	8.0	
15	11	4	2.7	1.7	3.4	
16	7	2	3.5	2.5	5.0	
17	4	2	2.0	1.0	2.0	
18	7	2	3.5	2.5	5.0	

SHEAR SURVEY

DATE OF SURVEY: 889 NOV 1965

SHEAR NOS.: UNDERLINED NOS.

SHEAR NOS. CIRCLED: SHEARS TAKEN ON OVERHEAD FIXTURES



BUILDING No. 1 PLAN

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 November 1965

Counting Instrument RIDL 2x: Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F. J. Bradley & E. L. Bradley Person Doing Counting J. V. Tekin & E.L. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG #1	6	2	3.0			
BG #2	2	2	1.0			
BG #3	3	2	1.5	1.8 avg. ~ 2.0		
Std. #1	2875	2	1437.5	1435.5		$\frac{\text{dpm} - 2914}{\text{cpm}} = \frac{1436}{1436} = 2.02 \sim 2.0$
1	8	2				
2	5	2				
3	10	2				
4	8	2				
5	3	2				
6	10	2				
7	5	2				
8	420	148	2.8	0.8	1.6	
9	14	2	7.0	5.0	10.0	
10	13	2	6.5	4.5	9.0	
11	12	2	6.0	4.0	8.0	
12	6	2	3.0	1.0	2.0	
13	13	2	6.5	4.5	9.0	
14	6	2	3.0	1.0	2.0	
15	27	2	13.5	11.5	23.0	
16	6	2	3.0	1.0	2.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 November 1965

Counting Instrument RIDL 2π; Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F.J. Bradley & E.L. Bradley Person Doing Counting J.V. Tekin & F.J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
36	6	2	3.0	1.0	2.0	
37	6	2	3.0	1.0	2.0	
38	22	2	11.0	9.0	18.0	
39	10	2	5.0	3.0	6.0	
40	6	2	3.0	1.0	2.0	
41	15	2	7.5	5.5	11.0	
42	8	2	4.0	2.0	4.0	
43	4	2	2.0	-	-	
44	15	2	7.5	5.5	11.0	
45	22	2	11.0	9.0	18.0	
46	6	2	3.0	1.0	2.0	
47	12	2	6.0	4.0	8.0	
48	7	2	3.5	1.5	3.0	
49	8	2	4.0	2.0	4.0	
50	9	2	4.5	2.5	5.0	
51	18	2	9.0	7.0	14.0	
52	25	2	12.5	10.5	21.0	
53	5	2	2.5	0.5	1.0	
54	12	2	6.0	4.0	8.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 Novemebr 1965

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F.J.Bradley & E.L.Bradley Person Doing Counting F.J.Bradley&J.V.Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
55	3	2	1.5	-	-	
56	4	2	2.0	-	-	
57	6	2	3.0	1.0	2.0	
58	10	2	5.0	3.0	6.0	
59	2	2	1.0	-	-	
60	4	2	2.0	-	-	
61	11	2	5.5	3.5	7.0	
62	6	2	3.0	1.0	2.0	
63	6	2	3.0	1.0	2.0	
64	12	2	6.0	4.0	8.0	
65	7	2	3.5	1.5	3.0	
66	5	2	2.5	0.5	1.0	
67	4	2	2.0	-	-	
68	7	4	3.5	1.5	3.0	
69	4	2	2.0	-	-	
70	3	2	1.5	-	-	
71	16	2	8.0	6.0	12.0	
72	14	2	7.0	5.0	10.0	
73	7	2	3.5	1.5	3.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 November 1965

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F.J. Bradley & E.L. Bradley Person Doing Counting F.J. Bradley & J.V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
74	10	2	5.0	3.0	6.0	
75	5	2	2.5	0.5	1.0	
76	11	2	5.5	3.5	7.0	
77	10	2	5.0	3.0	6.0	
78	7	2	3.5	1.5	3.0	
79	4	2	2.0	-	-	
80	130	2	65.0	63	126	Decontaminate
81	26	2	13.0	11.0	22.0	
82	40	2	20.0	18.0	36.0	
83	25	2	12.5	10.5	21.0	
84	21	2	10.5	8.5	17.0	
85	17	2	8.5	6.5	13.0	
86	14	2	7.0	5.0	10.0	
87	7	2	3.5	1.5	3.0	
88	8	2	4.0	2.0	4.0	
89	NOT COUNTED					
90	7	2	3.5	1.5	3.0	
91	9	2	4.5	2.5	5.0	
92	8	2	4.0	2.0	4.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 November 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F.J. Bradley, E.L. Bradley Person Doing Counting F.J. Bradley, J.V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
93	10	2	5.0	3.0	6.0	
94	5	2	2.5	0.5	1.0	
95	4	2	2.0	1.0	2.0	BG = 1.0 avg.
96	3	2	1.5	0.5	1.0	
97	3	2	1.5	0.5	1.0	
98	6	2	3.0	2.0	4.0	
99	17	11	1.5	0.5	1.0	
100	6	2	3.0	2.0	4.0	
101	2	2	1.0	-	-	
102	6	2	3.0	2.0	4.0	
103	6	2	3.0	2.0	4.0	
104	4	2	2.0	1.0	2.0	
105	4	2	2.0	1.0	2.0	
106	6	2	3.0	2.0	4.0	
107	6	2	3.0	2.0	4.0	
108	11	2	5.5	4.5	9.0	
109	10	2	5.0	4.0	8.0	
110	9	2	4.5	3.5	7.0	
111	3	2	1.5	0.5	1.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 November 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F.J. Bradley, E.L. Bradley Person Doing Counting F.J. Bradley, J.V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
112	9	2	4.5	3.5	7.0	
113	NOT COUNTED					
114	4	2	2.0	1.0	2.0	
115	9	2	4.5	3.5	7.0	
116	5	2	2.5	1.5	3.0	
117	7	2	3.5	2.5	5.0	
118	7	2	3.5	2.5	5.0	
119	4	2	2.0	1.0	2.0	
120	7	2	3.5	2.5	5.0	
121	6	2	3.0	2.0	4.0	
122	7	2	3.5	2.5	5.0	
123	7	2	3.5	2.5	5.0	
124	8	2	4.0	3.0	6.0	
125	16	2	8.0	7.0	14.0	
126	11	2	5.5	4.5	9.0	
127	4	2	2.0	1.0	2.0	
128	6	2	3.0	2.0	4.0	
129	8	2	4.0	3.0	6.0	
130	18	2	9.0	8.0	16.0	

SMEAR RESULTS

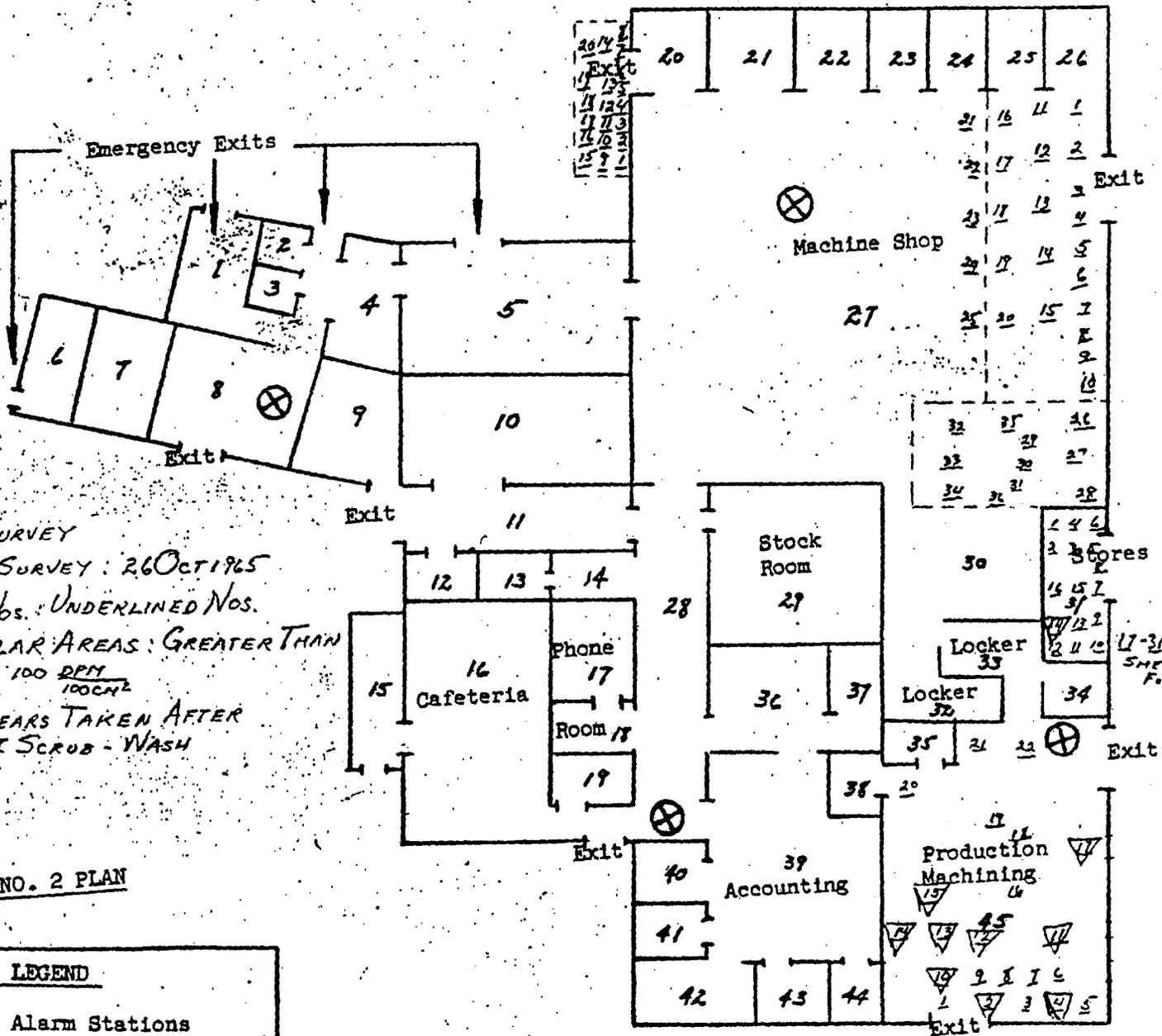
Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 8 & 9 November 1965

Counting Instrument RIDL 2π:Proportional (Windowless) Date of Counting 9 November 1965

Person Doing Survey F.J.Bradley & E.L.Bradley Person Doing Counting F.J.Bradley, J.V.Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
131	5	2	2.5	1.5	3.0	
132	5	2	2.5	1.5	3.0	
133	5	2	2.5	1.5	3.0	
134	2	2	1.0	-	-	
135	14	2	7.0	6.0	12.0	
136	5	2	2.5	1.5	3.0	
137	4	2	2.0	1.0	2.0	
138	2	2	1.0	-	-	
139	3	2	1.5	0.5	1.0	
140	2	2	1.0	-	-	
141	4	2	2.0	1.0	2.0	
142	2	2	1.0	-	-	
143	1	2	0.5	-	-	
144	1	2	0.5	-	-	
145	3	2	1.5	0.5	1.0	
146	3	2	1.5	0.5	1.0	
147	6	2	3.0	2.0	4.0	
148	2	2	1.0	-	-	
149	3	2	1.5	0.5	1.0	

A-III-16



SMEAR SURVEY
 DATE OF SURVEY: 26 OCT 1965
 SMEAR NOS.: UNDERLINED NOS.
 TRIANGULAR AREAS: GREATER THAN
 100 DPM / 100 CM²
 ALL SMEARS TAKEN AFTER
 1st SCRUB - WASH

BUILDING NO. 2 PLAN

LEGEND

⊗ Fire Alarm Stations

17-31 AS PER
 SMEAR RES
 FORM

SMEAR RESULTS

Location of Survey Sylcor Building #2 Outside of Room #20 Date of Survey 26 October 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 26 October 1965

Person Doing Survey D. C. Bogen Person Doing Counting D. C. Bogen

After First Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} - R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG						1.0 avg.
1	1	2	0.5	-	-	
2	1	2	0.5	-	-	
3	0	2	-	-	-	
4	1	2	0.5	-	-	
5	0	2	-	-	-	
6	2	2	1.0	-	-	
7	1	2	0.5	-	-	
8	2	2	1.0	-	-	
9	1	2	0.5	-	-	
10	1	2	0.5	-	-	
11	0	2	-	-	-	
12	1	2	0.5	-	-	
13	7	7	1.0	-	-	
14	9	2	4.5	3.5	7.0	
15	3	2	1.5	0.5	1.0	
16	1	2	0.5	-	-	
17	0	2	-	-	-	
18	2	3	0.6	-	-	

SMEAR RESULTS

Location of Survey Sylcor Building #2, Room 27 Date of Survey October 26, 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting October 26, 1965

Person Doing Survey D. C. Bogen Person Doing Counting D. C. Bogen

After First Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG						1.0
1	7	2	3.5	2.5	5.0	
2	2	2	1.0	-	-	
3	2	2	1.0	-	-	
4	4	2	2.0	1.0	2.0	
5	6	2	3.0	2.0	4.0	
6	2	2	1.0	-	-	
7	0	2	-	-	-	
8	3	2	1.5	0.5	1.0	
9	1	2	0.5	-	-	
10	2	2	1.0	-	-	
11	0	2	-	-	-	
12	2	2	1.0	-	-	
13	2	2	1.0	-	-	
14	1	2	0.5	-	-	
15	1	2	0.5	-	-	
16	2	2	1.0	-	-	
17	4	2	2.0	1.0	2.0	
18	6	2	3.0	2.0	4.0	

SMEAR RESULTS

Location of Survey Sylcor Building, #2, Room 27 Date of Survey October 26, 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting October 26, 1965

Person Doing Survey D. C. Bogen Person Doing Counting D. C. Bogen

After First Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
19	60	11	5.5	4.5	9.0	
20	15	2	7.5	6.5	13.0	
21	15	2	7.5	6.5	13.0	
22	8	2	4.0	3.0	6.0	
23	6	2	3.0	2.0	4.0	
24	2	2	1.0	-	-	
25	0	2	-	-	-	
26	4	2	2.0	1.0	2.0	
27	2	2	1.0	-	-	
28	6	2	3.0	2.0	4.0	
29	14	2	7.0	6.0	12.0	
30	46	2	23.0	22.0	44.0	
31	26	2	13.0	12.0	24.0	
32	17	2	8.5	7.5	15.0	
33	29	2	14.5	13.5	27.0	
34	28	2	14.0	13.0	26.0	
35	35	2	17.5	16.5	33.0	
36	26	2	13.0	12.0	24.0	

SMEAR RESULTS

Location of Survey Sylcor Building #2, Room #31 Date of Survey 26 October 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 26 October 1965

Person Doing Survey J. V. Tekin Person Doing Counting J. V. Tekin

After First Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG						~ 1.0
1	35	2	17.5	16.5	33.0	
2	17	2	8.5	7.5	15.0	
3	49	2	24.5	23.5	47.0	
4	16	2	8.0	7.0	14.0	
5	23	2	11.5	10.5	21.0	
6	62	2	31.0	30.0	60.0	
7	22	2	11.0	10.0	20.0	
8	27	2	13.5	12.5	25.0	
9	12	2	6.0	5.0	10.0	
10	59	2	29.5	28.5	57.0	
11	6	2	3.0	2.0	4.0	
12	51	2	25.5	24.5	49.0	
13	7	2	3.5	2.5	5.0	
14	692	2	346.0	345.0	790.0	
15	13	2	6.5	5.5	11.0	
16	14	2	7.0	6.0	12.0	
17	4	2	2.0	1.0	2.0	Black water pipe
18	4	2	7.0	6.0	12	Black water pipe

SMEAR RESULTS

Location of Survey Sylcor Building #2, Room #31 Date of Survey 26 October 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 26 October 1965

Person Doing Survey J. V. Tekin Person Doing Counting J. V. Tekin

After First Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
19	3	2	1.5	0.5	1.0	Insulated pipe
20	2	1	2.0	1.0	2.0	Insulated pipe
21	1	1	1.0	-	-	Right wall
22	3	1	3.0	2.0	4.0	Right wall
23	13	1	13.0	12.0	24.0	Right wall
24	1	1	1.0	-	-	Back wall
25	0	1	-	-	-	Back wall
26	0	1	-	-	-	Back wall
27	D I D N O T C O U N T					Left wall
28	0	1	-	-	-	Left wall
29	1	5	0.2	-	-	Left wall
30	0	1	-	-	-	Light fixture
31	0	2	-	-	-	Light fixture

SMEAR RESULTS

Location of Survey Sylcor Building #2(1293 Area), Room45 Date of Survey 25 October 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 25 October 1965

Person Doing Survey J. V. Tekin Person Doing Counting J. V. Tekin

After First Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG#3	3	7	0.43			
BG#1	3	6	0.50			
BG#2	1	1	1.00	0.6~1.0		
1	24	2	12.0	11.0	22.0	
2	138	2	69.0	68.0	136.0	
3	72	2	36.0	35.0	70.0	
4	112	2	56.0	55.0	110.0	
5	33	2	16.5	15.5	31.0	
6	27	2	13.5	12.5	25.0	
7	18	2	9.0	8.0	16.0	
8	52	2	26.0	25.0	50.0	
9	87	2	43.5	42.5	85.0	
10	134	2	67.0	66.0	132.0	
11	263	2	131.5	130.5	261.0	
12	136	2	68.0	67.0	134.0	
13	146	2	73.0	72.0	144.0	
14	127	2	63.5	62.5	125.0	
15	136	2	68.0	67.0	134.0	
16	93	2	46.5	45.5	91.0	

SMEAR RESULTS

Location of Survey Sylcor Building #2, Room 45 Date of Survey 26 October 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 26 October 1965

Person Doing Survey D. C. Bogen Person Doing Counting D. C. Bogen

Room 45 After 2nd Scrub Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
1	81	2	40.5	39.5	79.0	
2	285	10	28.5	27.5	55.0	
3	38	2	19.0	18.0	36.0	
4	19	2	9.5	8.5	17.0	
5	110	4	27.5	26.5	53.0	
6	48	2	24.0	23.0	46.0	
7	229	2	114.5	113.5	227.0	
8	5	2	2.5	1.5	3.0	
9	13	2	6.5	5.5	11.0	
10	50	2	25.0	24.5	49.0	
11	8	2	4.0	3.0	6.0	
12	63	2	31.5	30.5	61.0	
13	332	2	166.0	165.0	330.0	
14	63	2	31.5	30.5	61.0	
15	59	2	29.5	28.5	57.0	
16	19	2	9.5	8.5	17.0	
17	22	2	11.0	10.0	20.0	
18	17	2	8.5	7.5	15.0	
19	30	2	15.0	14.0	28.0	

SMEAR RESULTS

Location of Survey Sylcor Building #2, Room 45 Date of Survey 26 October 1965

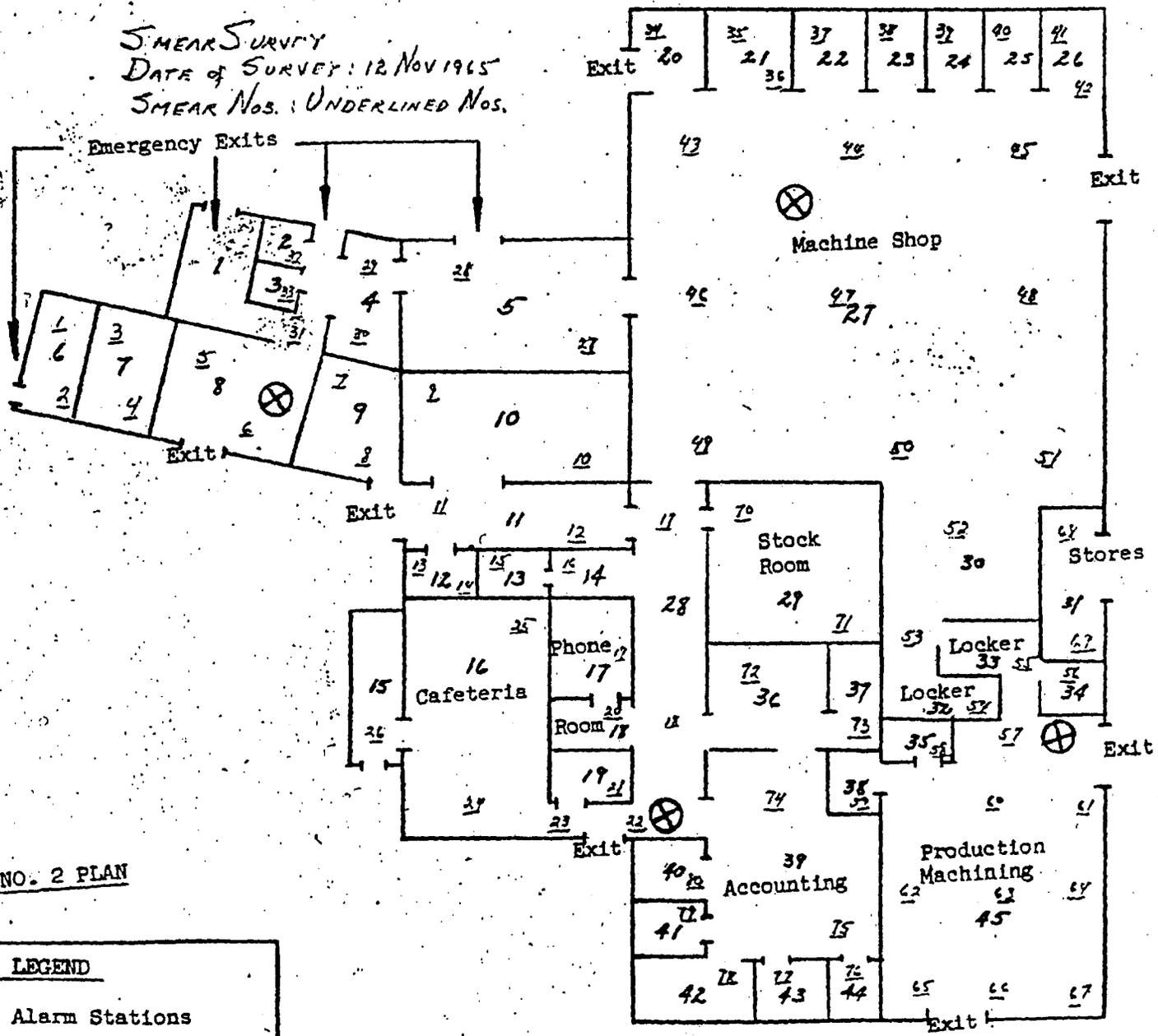
Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 26 October 1965

Person Doing Survey D. C. Bogen Person Doing Counting D. C. Bogen

Room 45 After 2nd Scrub Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
20	40	2	20.0	19.0	38.0	
21	10	2	5.0	4.0	8.0	
22	16	2	8.0	7.0	14.0	
23	8	2	4.0	3.0	6.0	
24	33	2	16.5	15.5	31.0	Red pipe overhead at entrance
25	25	2	12.5	11.5	23.0	I Beam
26	112	2	56.0	55.0	110.0	Left bus electrical distribution
27	125	2	62.5	61.5	123.0	Block pipe-left side
28	23	2	11.5	10.5	21.0	1 row from left 3rd light
29	34	2	17.0	16.0	32.0	Heating unit near exit
30	23	2	11.5	10.5	21.0	Top of speaker
31	77	2	38.5	37.5	75.0	3rd row of lights from left; 1st one from entrance
32	60	4	15.0	14.0	28.0	Red pipe underneath 4th row of lights

SMEAR SURVEY
 DATE OF SURVEY: 12 NOV 1965
 SMEAR NOS. UNDERLINED NOS.



BUILDING NO. 2 PLAN

LEGEND

⊗ Fire Alarm Stations

A-III-28

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12 November 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12 November 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

After Third Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG						1.0 Avg.
1	NOT APPLICABLE					
2	NOT APPLICABLE					
3	9	2	4.5	3.5	7.0	
4	4	2	2.0	1.0	2.0	
5	19	2	9.5	8.5	17.0	
6	17	2	8.5	7.5	15.0	
7	8	2	4.0	3.0	6.0	
8	6	2	3.0	2.0	4.0	
9	9	2	4.5	3.5	7.0	
10	3	2	1.5	0.5	1.0	
11	5	2	2.5	1.5	3.0	
12	10	2	5.0	4.0	8.0	
13	4	2	2.0	1.0	2.0	
14	8	2	4.0	3.0	6.0	
15	4	2	2.0	1.0	2.0	
16	NOT COUNTED					
17	12	2	6.0	5.0	10.0	
18	6	2	3.0	2.0	4.0	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12 November 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12 November 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

After Third Scrub Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
19	8	2	4.0	3.0	6.0	
20	5	2	2.5	1.5	3.0	
21	NOT COUNTED					
22	8	2	4.0	3.0	6.0	
23	6	2	3.0	2.0	4.0	
24	4	2	2.0	1.0	2.0	
25	5	2	2.5	1.5	3.0	
26	9	2	4.5	3.5	7.0	
27	12	2	6.0	5.0	10.0	
28	16	2	8.0	7.0	14.0	
29	18	2	9.0	8.0	16.0	
30	16	2	8.0	7.0	14.0	
31	7	2	3.5	2.5	5.0	
32	8	2	4.0	3.0	6.0	
33	10	2	5.0	4.0	8.0	
34	7	2	3.5	2.5	5.0	
35	9	2	4.5	3.5	7.0	
36	12	2	6.0	5.0	10.0	
37	11	2	5.5	4.5	9.0	

SMEAR RESULTS

Location of Survey Sylcor Building #2(1293 Area) Date of Survey 12 November 1965

Counting Instrument RIDL 2π:Proportional (Windowless) Date of Counting 12 November 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

After Third Scrub-Wash

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
38	12	2	6.0	5.0	10	
39	10	2	5.0	4.0	8	
40	9	2	4.5	3.5	7	
41	9	2	4.5	3.5	7	
42	7	2	3.5	2.5	5	
43	8	2	4.0	3.0	6	
44	10	2	5.0	4.0	8	
45	6	2	3.0	2.0	4	
46	9	2	4.5	3.5	7	
47	11	2	5.5	4.5	9	
48	9	2	4.5	3.5	7	
49	6	2	3.0	2.0	4	
50	5	2	4.5	3.5	7	
51	4	2	2.0	1.0	2	
52	4	2	2.0	1.0	2	
53	5	2	2.5	1.5	3.0	
54	12	2	6.0	5.0	10.0	
55	12	2	6.0	5.0	10.0	
56	12	2	6.0	5.0	10.0	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12 November 1965

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12 November 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

After Third Wash-Scrub

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
57	26	2	13.0	12.0	24.0	
58	30	2	15.0	14.0	28.0	
59	19	2	9.5	8.5	17.0	
60	80	2	40.0	39.0	78.0	Grease spot
61	50	2	25.0	24.0	48.0	
62	27	2	13.5	12.5	25.0	
63	20	2	10.0	9.0	18.0	
64	23	2	11.5	10.5	21.0	
65	26	2	13.0	12.0	24.0	
66	19	2	9.5	8.5	17.0	
67	15	2	7.5	6.5	13.0	
68	85	2	42.5	41.5	83.0	
69	12	2	6.0	5.0	10.0	
70	8	2	4.0	3.0	6.0	
71	9	2	4.5	3.5	7.0	
72	13	2	6.5	5.5	10.0	
73	13	2	6.5	5.5	10.0	
74	4	2	2.0	1.0	2.0	
75	2	2	1.0	0.5	1.0	



May 26, 1965

Mr. R. C. Blair, Manager
U.S. Atomic Energy Commission
Savannah River Operations Office
P.O. Box A
Aiken, S.C.

Attention: Mr. N. J. Donahue

Gentlemen:

In order to expedite the cleaning up of the Hicksville area, it is necessary that the uranium scrap be returned to Fernald, Ohio for recovery. The limitations on the amount of material allowed on a truck when moving from Hicksville to Fernald will require the use of these trucks with an extremely light load (3-1/2 tons). The use of aluminum boxes would enable us to ship full loads, but the scarcity of these boxes prevents us from using them.

Fernald now ships material to us in wooden boxes constructed so that there is a water space above and below the cores. These boxes are available for use for shipping the scrap to Fernald but they do not meet the requirements of the Hicksville license.

As a temporary measure, therefore, I would like to request that permission be given to deviate from the license at this time to allow us to return scrap uranium material to

Mr. Blair

-2-

5/26/65

Fernald in the same boxes used to ship the material to us and in full truck amounts (33,000 lbs.). This would enable us to remove all uranium material from the area in a reasonable time at a reasonable cost. This deviation will be required for two to four trucks only and will end when the contract is terminated.

I would like, therefore, to solicit your aid in the solution of this problem and would like permission to use these boxes as soon as possible.

Very truly yours,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.



Edward Meyer
Engineer-in-Charge

EM/gg
cc: J. Hopkins

bcc: W.R. Mandaro







E. I. DU PONT DE NEMOURS & COMPANY

SAVANNAH RIVER PLANT
AIKEN, SOUTH CAROLINA 29802
(TEL. & TEL. ADDRESS, AUGUSTA, GA.)

EXPLOSIVES DEPARTMENT
ATOMIC ENERGY DIVISION

August 4, 1965

Mr. R. C. Blair, Manager
Savannah River Operations Office
U. S. Atomic Energy Commission
Aiken, South Carolina

Attention: Mr. J. S. Hopkins, Director
Administrative Division

Dear Mr. Blair:

TRANSFER OF EQUIPMENT FROM SYLCOR TO SAVANNAH RIVER PLANT

As a followup to my letter of June 18, 1965, and in compliance with Mr. Hopkins' request, we are attaching instructions for delivery of equipment to be transferred. This information was given to Mr. Hopkins informally last week. In general the equipment will be delivered to Building 714-6G for storage prior to installation. Certain items of laboratory and inspection equipment, and machine tools will be delivered to buildings in 300/700 Areas. The attached list slightly modifies the previous list transmitted on June 18. Descriptions of equipment have been improved and clarified. Several small items have been added or omitted as a result of further review by engineering inspection teams.

We are proceeding with the necessary authorization requests for transfer of this equipment. Several items of machine tools, to be utilized by the Savannah River Laboratory and the Plant Maintenance Department, are being authorized on Indirect Repair Orders or Purchase Requisitions. Use of these items will not be directly related to increased production capabilities for the 300 Area. The various items to be used in fuel element production will be authorized on existing projects or on the planned new project for increased capabilities.

As mentioned previously, we can foresee no immediate use for the uranium machining equipment described on page 4 of the attached but, as requested, we are in the process of transferring it here for storage. Agreement was reached with members of your Staff that we would be provided with authorization to undertake this action as well as with instructions on property accounting treatment.

Yours very truly,



J. A. Monier, Jr.
Assistant Plant Manager

WJB:is
Attachment

SHIPPING INSTRUCTIONS FOR EQUIPMENT TO BE TRANSFERRED FROM
SYLOR TO SAVANNAH RIVER PLANT

TO BE DELIVERED TO BUILDING 313-M

<u>Equipment No.</u>	<u>Description</u>
1719	Positioner for reflectoscope
1980	Reflectoscope
3771	Reflectoscope
3822	Camera (photo identification with associated fixtures, supports and conveyor)
3916	Toledo counter balance -- capacity 5 kg.
3789	Taft-Pierce centering fixture
3791	Ultrasonic Flaw Detector w/scope

TO BE DELIVERED TO BUILDING 322-M

<u>Equipment No.</u>	<u>Description</u>
2357	Illuminator
2358	Microscope
3747	Camera

TO BE DELIVERED TO BUILDING 723-A

<u>Equipment No.</u>	<u>Description</u>
1713	15 KC F.T.C.
3913	Nickel Detector
3712	Conductivity meter
3303	Rate Meter
3333	Potentiometer
3110	Potentiometer
3719	Brush recorder with radiation thermometer and infra-red measuring system
3873	
3897	
3846	D.C. recorder, amplifier and infra-red temperature measuring system, complete with cart
3826	
3928	
3929	
3938	Dermatron
3165	

TO BE DELIVERED TO BUILDING 717-A

<u>Equipment No.</u>	<u>Description</u>
3261	Bridgeport mill
3436	Hartford dividing head
3787	Pullman machine
3637	Elox machine
3408	P & H AC-DC welder

TO BE DELIVERED TO BUILDING 773-A

<u>Equipment No.</u>	<u>Description</u>
270	Moore No. 2 jig borer
341	B & L Toolmakers Microscope
3844	Low sheetmetal roll
256	Metal brake

All other items requested for transfer by Du Pont will be delivered to the Fuel Fabrication Equipment Storage, Building 714-6G (formerly Z-8321-C) (see attached list).

All items of machine tools, used for machining uranium, as listed on Appendix B - Letter of June 28, are to be delivered for contaminated equipment storage in Building 714-6G.

It will be desirable in dispatching equipment for receipt and storage in Building 714-6G that all items associated with the automatic plating machine complex be identified so they can be set aside as one group. This will also apply to Equipment No. 3765 - Sheffield Gage System.

TO BE DELIVERED TO BUILDING 714-6G

<u>Equipment No.</u>	<u>Description</u>
3699	Grain size tester
3412	Trim-Weld machine
3780	Nicket test equip.
3782	Conveyor
3813	Bond tester
3820	Accumulator
3921	Lubricator
3934	Saw
3940	Accumulator
3842	Rib trimmer
3920	Rib trimmer
3824	End trimmer
	<u>Plating Line Complex</u>
2033	Rubber lined tank
3108	Filter pump assembly
3109	Filter pump assembly
3162	PH controller
3169	Filter
3220	Pumps
3221	
3222	
3224	Deionizer
3255	Temp. Controller
3276	Conveyor
3319	Plating Machine
3363	Filter
3366	Mixers
3370	Rinse Tank

Equipment No. Description
Plating Line Complex (Continued)

3374	Pump
3388	Coil
3391	Flowrater
3396	Rack Carts
3398	Pump
3406	Temp. controller
3454	Coil
3538	Controller
3596	Controller
3602	Manometer
3655	Pump
3817	Karbo clear
3541	Deminerlizer
3698	PH meter
3796	Solubridge
3866	Pump
3909	PH analyzer
3910	PH analyzer
3208	} Vacuum driers
3209	
3210	
3211	
3212	
2230	Pangborn sand blaster
3384	Temp. controller
3404	Fume scrubber
3595	Temp. controller
3776	Eimco filter
3884	Electric oven
All Mark V E Plating Racks, Inner & Outer	
All Mark V E Anodes	
All Mark V B Anodes	

Inspection Equipment

341	Tool Makers Microscope
1,500	Sheffield Air Gage
1,852	Gaging Fixture
1,857	Federal Gage
1,873	Comtor Amplifiers P-2
1,874	" " "
1,875	" " "
1,876	" " "
1,877	" " "
1,892	Gagine Fixture
1,893	" "
1,905	Model P-2 Amplifier
1,912	Sheffield Height Gage
1,989	Gaging Fixture
1,990	" "
2,030	Dial Gage
2,512	Gaging Fixture

Equipment No. Description
Inspection Equipment (Continued)

2,518	Comtor P-2 Amplifier
2,519	" " "
3,050	B & S Thrift Blocks
3,142	Federal Caliper Gauge M9P
3,143	" " " "
3,191	Federal Groove Gage P-12
3,291	Borescope M-27A
3,301	Vernier Gage
3,597	B & S Intrimik
3,598	" "
3,599	" "

Uranium Machining Equipment

3706	Arbor Press
1731	Matco
3372	Motor
3714	Lathe
664	Press
238	Degreaser
3704	Hendy Lathe
3650	Excello
2045	Lathe
3245	Excello
1314	Saw
3609	Excello
1803	Sander
1773	Lathe
3540	Excello
2067	Cincinnati
3376	Gearotor
3622	Lathe
2034	Drill Press
3280	Cut Off

Other Equipment

3765	Sheffield Gage with all attachments
3720	Lithium Search Unit
24 Sets	Mark V E I.F. Furnace Dies and Hardware
24 Sets	Mark V B Furnace Dies only
	Inconel X-750 Stock
3892	Die Sizer
6	Vacuum Pumps w. 3 H.P. Drive
6	Hydraulic Power Units - Gearotor 8 GPM - 1000 psi
	3835 Die Loading Fixture
	3861 Die Breaking Fixture
	2 Ea. Complete Units
	2 Ea. Pump & Motor Sets
	Hydraulic Power Unit - Viking
	Gearotor, 3 GPM - 1000 psi
	Racine - 2 pumps - 12 GPM - 1000 psi
	Gearotor - 12 GPM - 500 psi
	Helishaw - 3 GPM - 5000 psi
	Racine - 8 PA - Variable

Equipment No.

Description

Other Equipment (Continued)

3788	Auto analyzer
2377	Metallograph
2452	Polishing table
3693	Electro-polisher
3755	Stud sharpener
3874	Polishing table
3734	Polishing table
3786	Polishing table
Hydraulic Power Unit	Denison model A051- 24OFF with 7 1/2-hp motor



UNITED STATES GOVERNMENT

Memorandum

TO : J. S. Hopkins, Director
Administrative Division

FROM : *G. H. Giboney*
G. H. Giboney, Deputy Director
Safety and Technical Services Division

SUBJECT: SURVEY AND DISPOSAL OF EQUIPMENT AT SYLCOR

DATE: November 4, 1965

STR:DCC:fb

We have reviewed the results of a survey performed by this Division on October 28 and 29 as previously discussed with you, and recommend disposal of the remaining Sylcor equipment as follows:

Cafeteria Equipment

Uranium contamination on this equipment ranges from 0 to 10 dpm per 100 sq. centimeters on all parts with the exception of bases and legs that have been in contact with the slightly contaminated cafeteria floor. These legs and bases smeared up to about 50 dpm per 100 sq. centimeters. No direct readings could be obtained on any of the cafeteria equipment with an Eberline alpha scintillation counter. Since uranium contamination at these levels is totally insignificant from a health hazards viewpoint, it is recommended that this equipment be unconditionally released, for any use whatsoever, with the possible exception of use in a facility where very low background levels are required for physics measurements.

Three-quarter Ton Stake Body Truck

Contamination on this vehicle ranges up to about 50 dpm per 100 sq. centimeters smearable, and up to 600 dpm by direct surface reading. Low level contamination was found even on the springs and frame of the truck. Although these levels are considered completely safe from a health standpoint, because of the possibility of a public relations incident that would ultimately cost more than the value of the truck, it is recommended that it be released only for use in a contaminated facility.

Fork Lift

Smearable contamination on this vehicle ranges up to about 55 dpm per 100 sq. centimeters, and direct surface readings up to about 1200 dpm per 100 sq. centimeters. It is recommended that this vehicle be released in the same manner, and for the same reason, as the stake body truck described above.

Detecto Scale

The platform of this scale smears up to 70 dpm per 100 sq. centimeters and a direct surface reading shows 600 dpm per 100 sq. centimeters. It is



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

November 4, 1965

recommended that this item be released for use in a contaminated facility unless the salvage value is such as to justify an expenditure of \$25.00 to \$50.00 for decontamination of the platform, weights, and all outer surfaces.

Fisher Oven, Double Pan Balance, Filing Cabinets, and Other Miscellaneous Equipment

These items may be released unconditionally with the one exception mentioned under cafeteria equipment.

We point out that all of the above equipment is within limits for release as scrap metal established by AEC Manual issuance.

cc: N. J. Donahue, T&P Division



SYLVANIA ELECTRIC PRODUCTS INC.SYLOR DIVISION

Attachment "A" 10

HICKSVILLE, NEW YORK

Effective JAN. 1, 1965

Use of Government Owned Facilities
In Performance of Private Commercial Work

- I. For purposes of this agreement all private commercial work will be referred to as "outside work" and will be considered work for the Sylcor Commercial Plant at Hicksville. All outside work to be performed will be requested on the Sylcor Work Order Form to be approved by the AEC SROO prior to start of work (or in accordance with agreements to be made with AEC).
- II. The work under Contract AT(30-1) 1293 shall at all times, and without any qualification or limitation whatsoever, have the absolute priority in time, effort, and in all other significant respects over any outside work. This agreement excludes all cost type work performed under an Appendix "C" agreement sponsored by the AEC as provided for in the contract under paragraph 2 of article 1.
- III. The work to be performed under this agreement will exclude the AEC Production, Inspection and Process Control Departments including the area occupied, equipment and personnel of these departments. These departments will hereinafter be referred to as AEC Operations Departments.
- IV. The work to be performed under this agreement will include the Area Occupied, Equipment and Personnel of the following departments hereinafter referred to as Production Support Departments:

<u>Dept. #</u>	<u>Name</u>
21	Chemical Services
23	Engineering Dept.
24	Machining Services
27	Plant Engineering (Drafting & Maint.)
28	Metallography Services

- V. The AEC Plant (Contract 1293) expenses will be credited monthly on a full cost reimbursement basis for all outside work performed by the Production Support Departments for the sum total of the following expenses:

1. Direct Labor

Based on actual time card charges to job numbers assigned to outside work.

continued

SYLVANIA ELECTRIC PRODUCTS INC.

SYLCOB DIVISION

HICKSVILLE, NEW YORK

Page 2

V. (continued)

2. Overhead

An overhead rate to be applied to direct labor which represents total AEC Plant overhead including all service department prorates and security department expenses.

A provisional rate will be established for interim use on outside work. This provisional rate will be adjusted to actual on a semi-annual basis.

3. Depreciation of AEC Owned Equipment

An overhead rate to be applied to direct labor which represents the depreciation of the equipment included in the production support departments. The amount charged will be calculated using the depreciation rates recorded on AEC records and will include an amount to represent depreciation on fully depreciated items.

A provisional rate will be established for interim use on outside work. This provisional rate will be adjusted to actual on a semi-annual basis.

The depreciation overhead rate will be arrived at by dividing the total direct labor of the Production Support Departments into the total depreciation dollars of the equipment in these departments plus an allocation of the Administration Department equipment depreciation. Due to the specialized nature of the plating equipment a separate rate will be established for outside plating work in the event such work becomes available.

4. Stores Materials

Any common use materials withdrawn from the stockroom for use on outside work will be charged to the job on the basis of a properly approved Stores Requisition charging the appropriate outside work order.

5. Charge For AEC Administration

A factor to be agreed upon by the parties will be applied to the sum of items 1 through 4 above. This amount will be credited to the AEC contract and will represent a charge for AEC administration of the procedures of this agreement.

continued -

SYLVANIA ELECTRIC PRODUCTS INC.

SYLOR DIVISION

HICKSVILLE, NEW YORK

Page 3

- VI. The Work Order form will show the job number, customer, estimated cost in detail and a complete description of the work to be done and the facilities to be used. The period of performance will also be indicated on the work order. Work will not be contracted for in excess of a six (6) month period.
- VII. An up-to-date listing of all equipment included in the Production Support Departments will be maintained showing tag number, date acquired, first cost, annual and monthly depreciation amounts. This listing will substantiate the monthly depreciation amounts to be used in developing the Depreciation Overhead Rate described in Article V Paragraph 3.



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BT

UNCLAS TO R C BLAIR FM F P BARANOWSKI PD CONFIRMING MY TELCON CMM

THE COMMISSION HAS APPROVED THE TERMINATION OF THE SYLCOR

CONTRACT PD ACCORDINGLY CMM SYLCOR SHOULD BE NOTIFIED IMMEDIATELY

THAT YOU PLAN TO PHASE OUT ALL WORK UNDER THAT CONTRACT AT THE

EARLIEST POSSIBLE DATE PD JCAE AND LOCAL CONGRESSMAN HAVE BEEN

NOTIFIED PD PARA

PLEASE ADVISE THIS OFFICE ASAP OF HOW YOU PLAN TO PHASE OUT

SYLCOR AND SWITCH THE LOAD TO SRP CMM INCLUDING TIME SCHEDULE

CMM FY 1966 COSTS AT SYLCOR AND PROPOSED DISPOSITION OF AEC-OWNED

EQUIPMENT CMM MATERIALS CMM ETC PD PARA

PAGE 2 RUEHRE 004 UNCLAS

IN THIS CONNECTION CMM IT IS SUGGESTED THAT THE LIST OF AEC-OWNED
EQUIPMENT AT SYLCOR BE FURNISHED TO RICHLAND FOR CONSIDERATION
OF POSSIBLE USE IN ITS CANNING OPERATIONS PD END REF PAB CLN PBW AEC 412
BT

NNNN



12

Wells 1-3500
Twx No. Hkvl 2358

SYLVANIA

SYLVANIA ELECTRIC PRODUCTS INC. *Subsidiary of* GENERAL TELEPHONE & ELECTRONICS CORPORATION

Sylcor Division

Cantiague Road
Hicksville, N. Y.

10

December 6, 1965

Mr. R. C. Blair, Manager
U.S. Atomic Energy Commission
Savannah River Operations Office
P.O. Box A
Aiken, S.C.

Dear Mr. Blair:

Re: Contract AT(30-1)-1293 - Termination

Pursuant to the termination of the aforesaid Contract by the United States Atomic Energy Commission and to the provision of Article VIII, as amended, entitled "Settlement of Government Investment in Improvements," a meeting was held at our Hicksville site on November 17, 1965 to determine a mutually agreed upon value of certain government improvements at said Hicksville location. The meeting was attended by Mr. Wise and certain of his associates, as well as various representatives of Sylvania. After extended discussions, it was agreed that Sylvania would make a settlement offer, as described below. Both Mr. Wise and his associates were in agreement therewith.

As background for the subject offer, it was important to recite certain considerations bearing thereon and which we discussed as a result of the aforesaid Contract provision re "Initial Improvements."

In accordance with the subject Contract provision, a mutually agreed upon net salvage value for the subject improvements was concluded in an amount of \$1,700. This took into consideration the respective appraisals of the parties, wherein your quoted net salvage value was \$3,400 and our quoted net salvage value was zero. The zero figure quoted by the Company does not take

into consideration the fact that the cost of removal of said improvements and related restoration far exceeds the value of said improvements. This, however, was called to the Savannah River representatives' attention.

Thereafter, the parties attempted to agree upon an appraised value in place for the subject improvements, based, in part, on the respective appraisals which had been obtained. The figure the AEC quoted was \$36,000, whereas our appraised value in place ranged from zero to \$64,400.25, depending on the usage of the building, or the likelihood thereof. Our appraiser noted that the subject building may well have already reached a state of economic and functional obsolescence, which would make the likelihood of resale remote and thus result in the value of improvements being zero. As indicated in our discussions, we do not intend to use the subject building, but rather intend to sell it and thus the salability thereof has a direct effect on the value of these improvements. The subject appraiser, as well as other realtors has indicated that the sale of the subject building is remote, but that the land on which these improvements are located does have marketability and a prospective purchaser undoubtedly would demolish the subject buildings. In this instance, of course, the value of these improvements would be zero and that was the basis of our initial offer.

In view of our wide divergence for an amount applicable to appraised value in place for the subject improvements we negotiated a mutually agreed appraised value in place of \$25,000.00. With that figure and the mutually agreed net salvage value as our bases and in the interest of settling the subject problem without awaiting the final disposition of these improvements, we agreed to officially make the following offer to you:

1. Sylvania will pay to the AEC in full settlement for the subject improvements, pursuant to the aforesaid Contract provision, the sum of \$10,000.
2. In addition to the aforementioned, Sylvania will withdraw its claim for reimbursement for cost of damage incurred in the removal of government owned equipment from the plant said claim being in the amount of \$3,852.00. It will also relieve the AEC from any further obligation for repairs, restoration, and/or damages re the contractor's property. This release shall not include or affect the agreement of the parties expressed in Modification No. 42 to Contract AT(30-1)-1293.

Mr. R. C. Blair

-3-

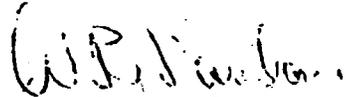
12/6/65

The aforesaid offer reflects our discussions at the above mentioned meeting and is made without prejudice to the Company's position on its interpretation of the subject Contract provisions. It is offered, subject to final agreement on contract language, in the interest of obtaining an equitable and expeditious settlement of the problem.

We would appreciate your prompt consideration of this settlement offer.

Very truly yours,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.



W. R. Mandaro
Manufacturing Manager

WRM/gg



W. M. Johnson, Manager, SROO

13
April 1, 1956

(Signed) E. L. Stetson, Manager, SROO

E. Stetson, Manager, SROO

~~FINAL~~ INSPECTION OF SYLCOR'S HICKSVILLE PLANT

STR:KER:fn

As discussed with A. J. Rizzo and Harold Glauberman of your staff by Karl Herde of this office, we request that Mr. Glauberman, who was at Sylcor with Herde on January 4, be made available again on April 6 or 7 for another brief inspection of subject facility. The exact time and date will be arranged by telephone.

The attached charts of the Sylcor Buildings indicate the areas being recleaned and indicate relative contamination levels. Also attached is a copy of the requisition arranging additional cleanup by Isotope, Inc.

We recommend that Glauberman work with Grieb making a few spot alpha instrument readings at each building. We have little doubt that the building will be found to have less than 2000 d/m smearable activity at any location. An informal confirmation of the survey and general statement on apparent improvements since January 4 will be appreciated.

Attachments:

1. Sylcor Bldg Charts (2)
2. Requisition

bcc: Manager's File, w/o attachments
SROO Rdg. File, w/o attachments
Adm. Div., w/o attachments



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P. J. Hagelston, Director
Safety and Technical Services Division

April 4, 1966

K. E. Herde, Chief
Radiation and Health Branch

ARRANGEMENTS FOR RADIOLOGICAL MONITORING AND CONSULTATION AT SYLCOR

STR:KEH:fn

Telephone conversation with H. Grieb, Sylcor, at 10:00 a.m. today confirmed that satisfactory progress was being made by Isotope, Inc., in the cleaning of the two Sylcor buildings. Work at building 1 is complete and the crew started on building 2 this morning. The best predictions are that the work will be completed by April 8. Grieb reports that the cleanup is apparently very effective and satisfactory. He was asked to make an independent report in the form of a letter of his monitoring measurements before and after the cleanup and an independent evaluation of the method.

Grieb was informed that arrangements had been made for Harold Glauberman, Operational Safety Branch, NYOO, to make an AEC review and inspection during the last 20 percent of the cleaning. He is to personally inspect with Grieb and survey with NYOO instruments and advise upon needed recleaning. To SROO he will report upon changes in appearance and in general radiation levels since his original visit there January 4, 1966. In case excessive condensate water is collected he may advise upon possible volume reduction.

Immediately after conversation with Grieb I called Mr. Glauberman, who concurred in my description of his role in the inspection. He will call Grieb to arrange for a visit there sometime Thursday, April 7. I described the contents of a memo and attachments that were sent to his office on April 1 and should be received later today.

In my opinion this arrangement will be very satisfactory to all concerned and will save this office the expense of a trip. NYOO stands to gain from this experience in that they are in the early stages of similarly closing a building in Connecticut used in a contract with Pratt and Whitney, Inc.

cc: J. S. Hopkins, Adm. Div.

2

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15

P. J. Hagelston, Director
Safety and Technical Services Division

April 12, 1966

K. E. Herde, Chief
Radiation and Health Branch

LEVELS OF CONTAMINATION OBSERVED AT SYLCOR

STR:KEH:fh

Hal Glauberman of NYOO made a report by telephone on April 11 of his instrument survey of uranium contamination remaining in parts of Building 1 of the Hicksville Plant on April 7. (See Memo of March 4 Herde to Hagelston.) He made no survey of Building 2 where the steam cleaning was in progress and expected to continue through April 14.

Due to differences in instrument performance Mr. Glauberman reported activity levels considerably higher than those reported by Isotopes, Inc. Mr. Glauberman used instruments with scintillation probes (Eberline PAC 1 S.A. and Texas - Ludlan) instead of the Eberline gas flow counters used by Isotopes, Inc. The two instruments gave comparable readings on a standard alpha source but the NYOO instruments and Sylcor's instruments all read higher on the contaminated floors than did the instruments of Isotopes, Inc.

Though Glauberman had planned to make only a few readings of confirmation, after finding a few readings higher than anticipated he was obliged to make many more (about 200) separate instrument measurements. In a room of Building 1 designated Area 37 on work charts, a spot about 4' X 16' was consistently over 4,000 d/m with one isolated spot of about 30,000 d/m (7400 c/m on an instrument of about 25% efficiency in detection).

The discrepancy in instrument readings had no obvious explanation. Mr. Glauberman advised Frank Bradley of Isotopes, Inc., to contact Eberline Instrument Company representatives for their interpretation of the anomaly.

Since the activity was firmly fixed, Mr. Glauberman suggested that additional sealing of the spots of higher contamination would satisfactorily control and conceal it. He recommended that an additional monitoring visit by this office may be timed to correspond with his next visit. As I see my schedule now I would plan to stop there Thursday and Friday, April 21 and 22 immediately following a visit to N.F.S. near Buffalo, New York.

cc: J. S. Hopkins, Adm. Div.

CONTRACT NO. AT(30-1)-GEN-366

TAB DOCUMENT

A:	GENERAL CONTRACT NO. AT(30-1)-GEN-366 DOCUMENTS, AMENDMENTS, MODIFICATIONS, AND CORRESPONDENCE:
1	Background Summary on Sylvania-Contract AT(30-1)-1293, dated August 12, 1954, discussing Contract AT-30-1-GEN-366.
2	Memo from V. L. Parsegian to W. E. Kelley, dated August 14, 1952, regarding Request For Letter Amendment 9 To Contract AT-30-1-GEN-366 Sylvania Electric Products, Inc.
3	Memo from F. M. Belmore to W. E. Kelley, dated January 22, 1953, regarding Amendment To Contract No. AT-30-1-GEN-366 With Sylvania Electric Products, Inc.
4	Letter from F. M. Belmore to E. S. Norris, dated March 17, 1953, regarding Metal Quality Investigation-Amendment To Contract No. AT-30-1-GEN-366.
5	Memo from G. E. Dunlap to File, dated May 7, 1953, regarding Visit To Sylvania May 1, 1953, Contract AT-30-1 GEN-366.
6	Memo from E. M. Kaulbach to R. L. Kirk, dated August 3, 1953, regarding GM-S And S-59 For Sperry Products, Inc.-Subcontract For Non-Destructive Testing Development Under Sylvania Prime Contract No. AT(30-1)-GEN-366.
7	Memo from W. B. Harris to W. H. Donnelly, dated December 6, 1954, regarding Hydrostatic Pressing Facility-Sylvania Contract AT(30-1)-GEN-366.
8	Savannah River Operations Office Contract Data Book, dated December 31, 1955.
9	New York Operations Office, Status and Progress Report For The Months Of June and July, 1956.
10	New York Operations Office, Status and Progress Report For The Month Of August, 1956.
11	New York Operations Office, Status and Progress Report For The Month Of September, 1956.
12	New York Operations Office, Status and Progress Report For The Month Of October, 1956.
13	New York Operations Office, Status and Progress Report For The Month Of December, 1956.

	December, 1956.
14	New York Operations Office, Status and Progress Report For The Month Of January, 1957.
15	Modification No. 26, Supplemental Agreement To Contract No. AT-30-1-GEN-366 and Modification No. 16, Supplemental Agreement To Contract No. AT(30-1)-1293.
16	New York Operations Office, Status and Progress Report For The Month Of April, 1957.
17	Memo from J. C. Clarke, dated April 26, 1957, regarding Notification Of Assignment Of Contract No. AT-30-1-GEN-366 With Sylvania Electric Products Inc.
18	New York Operations Office, Status and Progress Report For The Month Of May, 1957.
19	New York Operations Office, Status and Progress Report For The Month Of June, 1957.
20	New York Operations Office, Status and Progress Report For The Month Of July, 1957.
21	New York Operations Office, Status and Progress Report For The Month Of August, 1957.
22	New York Operations Office, Status and Progress Report For The Month Of November, 1957.
23	New York Operations Office, Status and Progress Report For The Month Of December, 1957.
24	Memo from J. F. O'Brien to A. D. Russell, dated December 26, 1957, regarding Subcontract Under AEC Contract AT30-1-GEN-366.
25	Security Survey of Sylvania Corning Nuclear Corp., dated February 25, 1959.
26	Letter Modification No. 35 effective as of the 30th day of September, 1959 to Contract No. AT-30-1-Gen-366 entered into as of the 1st day of July, 1948.
27	Memo from Howard M. Cohen , dated March 29, 1960, regarding Irradiation Programs.
28	Amendment No. 14 To Appendix "D", effective July 1, 1961.
29	Modification No. 39, Supplemental Agreement To Contract No. AT-30-1-GEN-366.

B:	WORK FOR GENERAL ELECTRIC COMPANY AIRCRAFT NUCLEAR PROPULSION DEPARTMENT
1	Telegram from Palmeto, Lockland Area Office, to Del Vecchia, New York Operations Office, regarding Work For General Electric From May 1954 Through February 1955.
2	Letter from V. J. Nicholas to R. E. VanAusdal, dated February 25, 1954, regarding Proposed Subcontract No. AT-24 With Sylvania Electric Products, Inc.
3	Subcontract Check List, Administrative Branch, Subcontract No. AT-24, Appendix "C".
4	Subcontract Check List, Finance Branch, Appendix "C".
5	Subcontract Procurement Check List, Technical Branch, Appendix "C".
6	Subcontract No. AT-24, Contract No. AT-30-1-GEN-366, Appendix "C".
7	Subcontract Check List, Administrative Branch, Subcontract No. AT-24, Modification No. 1.
8	Memo from E. M. Volten to M. Eisenbud, dated March 8, 1955, regarding Modification Number 1 To Sponsored Task C-4 (Subcontract AT-24 Between Sylvania Electric Products And General Electric Company).
9	Modification No. 1 to Sponsored Task C-4, Subcontract No. AT-24, dated February 18, 1955.
10	Subcontract Check List, Administrative Branch, Subcontract No. AT-24, Amendment No. 2.
11	Procurement Action Check List, Finance Branch, Subcontract No. AT-24, Amendment No. 2.
12	Modification No. 2 to Sponsored Task C-4, Subcontract No. AT-24, dated January 30, 1956.
13	Sponsored Task No. C-4, Modification No. 3, Contract AT(30-1)-GEN-366, Appendix "C", dated November 13, 1958.
14	Subcontract Check List, Procurement Management Branch, Sponsored Task C-4, Subcontract No. AT-24.
15	Memo from M. W. Holliday to John D. Hart, dated September 13, 1960, regarding Modification No. 14 To GE Subcontract AT-38 And Amendment No. 3 To GE Subcontract AT-24.

16	Subcontract Check List, Administrative Branch, Subcontract No. AT-30, Appendix "C".
17	Subcontract Procurement Check List, Technical Branch, Subcontract No. AT-30, Appendix "C".
18	Sponsored Task C-34, Contract No. AT-30-1-GEN-366, Subcontract No. AT-30, Appendix "C".
19	Subcontract Check List, Administrative Branch, Subcontract No. AT-30, Amendment No. 1.
20	Procurement Action Check List, Finance Branch, Subcontract No. AT-30, Amendment No. 1.
21	Memo from T. A. Nemzek to J. W. Bakscheider, dated November 16, 1955, regarding Proposed Amendment Number 1 To Subcontract AT 30 With Sylvania Electric Products.
22	Letter from J. W. Bakscheider to V. R. Nicholas, dated December 19, 1955, regarding Amendment No. 1 To Sponsored Task C-34 (Subcontract AT-30) Between General Electric Company And Sylvania Electric Products, Inc.
23	Amendment No. 1 to Sponsored Task C-34, Subcontract AT-30.
24	Subcontract Check List, Administrative Branch, Subcontract No. AT-30, Appendix "C".
25	Procurement Action Check List, Finance Branch, Subcontract No. AT-30, Amendment No. 2, Appendix "C".
26	Check List For Subcontract No. AT-30, Appendix "C".
27	Memo from M. W. Holliday to E. O. Kuns, dated March 19, 1956, regarding Amendment No. 2-Subcontract AT-30-Sylvania Electric Products, Inc.
28	Amendment No. 2 to Sponsored Task C-34, Subcontract AT-30.
29	Subcontract Check List, Administrative Branch, Subcontract No. AT-30, Amendment No. 3.
30	Procurement Action Check List, Finance Branch, Subcontract No. AT-30, Amendment No. 3.
31	Amendment No. 3 to Sponsored Task C-34, Subcontract AT-30.
32	Memo from James R. Marin to Charles E. Jones, dated March 2, 1959, regarding Sylvania-Corning Nuclear Corporation, Bayside, New York.

	Sylvania-Corning Nuclear Corporation, Bayside, New York.
33	Memo from Charles E. Jones to J. H. Jones, dated March 6, 1959, regarding Sylvania-Corning Nuclear Corporation, Bayside, New York And Hicksville, New York.
C:	WORK PERFORMED FOR THE OAK RIDGE OPERATIONS OFFICE
1	Letter from E. S. Norris to A. J. Vanderweyden, dated June 11, 1954, regarding Submission Of Revised Uranium And Thorium Project Proposals Sylvania Contract AT(30-1)GEN-366.
2	Memo from John R. Moore to W. H. Donnelly, dated July 6, 1954, regarding Contract No. AT-30-1-GEN-366 With Sylvania Electric Products, Inc.
3	Memo from T. P. Carbarry to Warren H. Donnelly, dated July 7, 1954, regarding Sylvania Electric Products, AT(30-1)-GEN-366.
4	Memo from S. R. Sapirie to J. P. Morgan, dated July 19, 1954, regarding Sylvania Electric Products, Inc., Contract AT(30-1)-GEN-366, Reduction Of Uranium And Thorium.
5	Letter from S. R. Sapirie to W. E. Kingston, dated July 20, 1954, regarding Appendix "C" to Contract AT(30-1)-GEN-366.
6	Memo from S. R. Sapirie to J. P. Morgan, dated July 23, 1954, regarding Sylvania Electric Products, Inc., Contract AT(30-1)-GEN-366, Reduction Of Uranium And Thorium.
7	Letter from W. H. Donnelly to W. E. Kingston, dated July 26, 1954, regarding AT(30-1)-GEN-366.
8	Draft Memo from F. R. Dowling to M. Goldberg, dated January 6, 1955, regarding Sylvania Electric Products, Inc., AT(30-1)-GEN-366-Sponsored Task 13.
9	Letter from William J. Donohue to W. H. Donnelly, dated February 25, 1955, regarding Contract AT-30-1-GEN 366 C-13 With OROO Project 1837.
10	Memo from M. Eisenbud to S. R. Sapirie, dated March 23, 1955, regarding Sylvania Electric Products, Inc.-AT-30-1-GEN-366 Oak Ridge Sponsored Work.
11	Letter from F. R. Dowling, dated April 20, 1956, regarding Process Development Work For Oak Ridge, Project 1837-a, Contract No. AT-30-1-GEN-366.
12	Letter from E. S. Norris to F. R. Dowling, dated May 24, 1956, regarding Contract AT-30-1-GEN-366.
13	Memo from V. J. Del Vecchia to L. B. MacKay, dated June 6, 1956, regarding Sylvania Electric Products, Contract AT-(30-1)-366 Sponsor Task C-13 And Attached

	Schedule #1.
14	Letter from F. R. Dowling, dated June 19, 1956, regarding Process Development Work For Oak Ridge, Project 1837-a, Contract No. AT-30-1-GEN-366.
15	Letter from A. M. Master, Jr. to F. R. Dowling, dated August 10, 1956, regarding Contract AT-30-1-366.
16	Memo from F. R. Dowling to A. M. Master, Jr., dated August 17, 1956.
17	Letter from Arthur M. Master, Jr. to John W. Ruch, dated May 16, 1957.
18	Memo from R. G. Humphries to M. Goldberg, dated July 25, 1957, regarding Sylvania-Corning Nuclear Corporation, AT-30-1-GEN-366.
19	Memo from John R. Moore to M. Goldberg, dated August 18, 1957, regarding Sylvania-Corning Nuclear Corporation, AT 30-1-GEN-366.
20	Memo from V. J. Del Vecchia to L. D. MacKay, dated January 8, 1958, regarding Sylvania-Corning Nuclear Corporation, Audit Of Oak Ridge Sponsored Portion Of Work Included In Contract AT-(30-1)-366 Period July 1, 1955 To June 30, 1957, Projects 1837, 1838, 1840 & 1889.
21	Memo from Lyman Bryan to L. D. MacKay, dated April 8, 1959, regarding Sylvania-Corning Nuclear Corporation, Audit Of Oak Ridge Sponsored Portion Of Work Included In Contract AT(30-1)-366, Period January 1, 1957 To June 30, 1957, Projects 1837, 1838, 1840 And 1889.
D:	WORK UNDER THE SAVANNAH RIVER OPERATIONS OFFICE
1	Sponsored Task C-24, Contract No. AT-30-1-GEN-366, Appendix "C", C-24, effective as of January 14, 1955.
2	Shipping Receipt For AT(30-1) GEN 366 Appendix C-Sponsored Task C-24, dated April 27, 1956.
3	Sponsored Task C-31, Contract No. AT-30-1-GEN-366, Appendix "C", effective as of February 23, 1955.
4	Modification No. 1, Supplemental Agreement to Contract No. AT-30-1-GEN-366, Sponsored Task C-31, effective as of March 21, 1955.
5	Modification No. 2, Supplemental Agreement to Contract No. AT-30-1-GEN-366, Sponsored Task C-31, effective as of March 12, 1956.
6	Sponsored Task C-33, Contract No. AT-30-1-GEN-366, Appendix "C", effective as of July 1, 1955.

7	Letter from E. S. Norris to R. C. Blair, dated March 16, 1956, regarding Partial Termination Sponsored Task C-33.
8	Modification No. 1, Supplemental Agreement to Contract No. AT(30-1)-GEN-366, Sponsored Task C-33, effective as of March 16, 1956.
9	Modification No. 2, Supplemental Agreement to Contract No. AT(30-1)-GEN-366, Sponsored Task C-33, effective as of July 1, 1956.
10	Modification No. 3, Supplemental Agreement to Contract No. AT(30-1)-GEN-366, Sponsored Task C-33.
11	Letter from Garth W. Edwards to J. Donohue, dated January 9, 1957, regarding Status Of Sponsored Task C-33.
12	Memo from Lyman Bryan to James Wise, dated October 12, 1959, regarding Sylvania-Corning Nuclear Corp. Contract AT-(30-1)-366 Audit Of Sponsor Task C-33 Savannah River Oper. Office Audit Period: July 1, 1958 to April 30, 1959.
E:	WORK FOR DU PONT
1	Letter from Garth W. Edwards to R. C. Blair, dated May 2, 1959, regarding Contract AT(30-1)GEN-366, Proposed Sponsored Task C-74.
2	Telecommunication Message from R. C. Blair to Garth Edwards, dated June 17, 1959.
3	Task No. C-74, Contract AT(30-1)-GEN-366, Appendix "C".
4	Modification No. 1 To Task No. C-74 Under Contract AT(30-1)-GEN-366.
5	Letter from R. C. Blair to M. C. Cullen, dated December 23, 1959, regarding Sponsored Task C-74 Under Contract AT(30-1)-GEN-366.

A

This document consists of 2 pages
No. 2 of 12 Copies, Series A
August 12, 1954

Distribution

Paul J. Hagelston

SR-TM-1621

BACKGROUND SUMMARY ON SYLVANIA - CONTRACT

AT(30-1)-1293	Cancelled
Date	11-28-77
For the U.S. Atomic Energy Commission	
<i>[Signature]</i>	
Division of Classification	

SYMBOL: TM:KJ D:pcw

Historical Background

In the latter part of 1947, Sylvania Electric Products, Inc. at Bayside, L. I., initiated a metallurgical research and development program under Contract AT-30-IGEM-366 with NYOO. At this time, the Commission was interested in the possibilities of powder metallurgy as a method for the fabrication of fuel elements in reactor components. By late 1951, Sylvania had developed apparently successful laboratory methods for producing uranium slugs by powder metallurgy techniques.

On this basis, a contract No. AT(30-1)-1293 was entered into December 10, 1951, with Sylvania Electric Products by NYOO to expand the powder metallurgy development on a pilot plant scale. Following the signing of this contract, Sylvania acquired by outright purchase a development site at Hicksville, suitable for pilot plant operations. There were two major buildings on the property. Building No. 1 was used to house the operation phase of the pilot plant and administrative offices. Building No. 2 was used to house the drafting and design offices, machine shops, storage rooms, and cafeteria. Building alterations and rehabilitation began in February 1952. Initial pilot plant operation began on August 15, 1952. Experimental production was continued through the end of fiscal year 1954.

Beginning in the latter part of January, 1954, at the request of the du Pont Company, Sylvania prepared about 160 uranium oxide-aluminum fuel slugs and lithium salts-aluminum target slugs by powder metallurgy techniques at Hicksville. At that time it was believed that slugs prepared from oxides and salts with aluminum powder would be less reactive with water than cast or extruded aluminum alloy slugs. Although the manufacturing experiment was successful, interest in the development waned due to the solution of the problem through another line of attack. Again at the request of the du Pont Company, in March 1954, Sylvania embarked on a development program to pressure bond and can, cast and extruded

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 DOES NOT CONTAIN UNCLASSIFIED
 CONTROLLED NUCLEAR INFORMATION
 ADC:ADD CG:VMP 2
 Reviewed: *V. J. [Signature]* 9-00
 Cancelled
 V. M. Gardner, DOE-SR Classification Analyst
 Date: 3-4-03

608-16

RESTRICTED DATA ON THE DISCLOSURE OF ITS CONTENTS

uranium-aluminum slugs, by means of a similar technique. The successful experimental work thus initiated resulted in a letter on May 28, from du Pont (L. Squires, Director, Technical Division) to Sylvania (Walter E. Kingston, General Manager, Atomic Energy Division) requesting a formal proposal for pressure bonding 25,000 enriched uranium-aluminum alloy slugs.

In response to this request, on June 17, 1954, a proposal was made to Mr. Curtis A. Nelson from Mr. E. S. Norris, Manager, Sylvania's Control Department, by means of a letter and attachments. After due consideration and negotiation, proposal C of this letter was accepted and supplement 8 to the original contract was signed on June 29, 1954. In the meantime, in order to implement SROO's anticipated intention of accepting some of Sylvania's proposals, Mr. H. B. Fry, Manager, NICO, by letter of June 8 extended the contract through July 31, 1954, and added \$9,500 to the Commission's monetary obligation under the contract. Sylvania was authorized to proceed to plan and prepare for work at Hicksville on the assumption that the Commission would authorize, prior to August 1, a further contract modification covering one or more of the proposals under consideration.

Contractual Information

The contract is a cost-plus-fixed fee type. Fee is based on 6% of estimated operation cost. The contract is integrated, and is financed by Sylvania funds. The services under this contract were procured by negotiation without formal advertising.

In round numbers, the modified contract calls for the pressure-bond canning of 50,000 enriched slugs (slugs, caps, cans to be furnished by SROO) during the period July 1954 through May 1955. Total estimated cost is \$689,000. Of this, the fee will amount to \$37,000 and \$57,500 is the estimated capital cost. Total construction is estimated as \$7,200, largely for a security storage vault and alarm equipment.

Status Reports

For additional detail concerning overall status of the contract, reference is made to SR-TM-1530, dated 7/15/54 and SR-TM-1611, dated 8/10/54.

Distribution:

1A Nelson/Blair/Vogel	7A Bergen
2A Davis	8A Matls Br. Files
3A Edwards/Vinciguerra	9A Chrono
4A Slaton	10,11,12A Rdg. Files
5A Low	
6A Samples	

V. B. Kelley, Manager

August 14, 1952

V. L. Parsagian, Director, Research Division

REQUEST FOR LETTER AMENDMENT 9 TO CONTRACT AT-30-1-52E-366 - SYLVANIA ELECTRIC PRODUCTS, INC.

SYMBOL: RD:JDK:ds

ATTENTION: V. C. DUNOONRE, ASSISTANT GENERAL COUNSEL

Please extend the term of the subject contract to September 30, in order to allow time for the negotiation of a definitive amendment to cover all research work to be performed through June 30, 1953.

The level and Scope of Work to be carried out by Sylvania had not been determined by AEC until this week; and accordingly, Sylvania has been unable to present a proposal. It is expected that they will submit a proposal by August 31 and that a definitive amendment will be negotiated before September 30.

CC:
F. Belmore, Production ✓
F. Christia, Budget
J. Clarke, contract coordinator

NARA II
RG 326
Accession:
442-326-83-
012
Box 55

RECEIVED
17 1952

NARA 002048

W. E. Kelley, Manager

January 22, 1953

F. M. Belmont, Director, Production Division

AMENDMENT TO CONTRACT NO. AT-30-1-GEN-366 WITH SYLVANIA ELECTRIC PRODUCTS, INC.

SYMBOL: FM:GEM:emh

Attention: V. C. Duncombe, Assistant General Counsel

Please prepare Amendment No. 5 to the above contract as follows:

1. Perform and report on certain analytical studies of samples of uranium ingot, bar or slug metal as will be furnished by the Commission from time to time.
2. Increase Commission obligation in the amount of \$6,000 for this work.

The above analytical studies will be performed under pilot plant support program at Bayside, New York, and will be primarily required for the ingot quality improvement programs at St. Louis and Fernald as well as for information to Sylvania on the nature of uranium ingot feed material for the pilot plant at Ricksville.

cc: J. C. Clarke
 F. Chrestia
 V. L. Parsegian
 T. P. Carberry

** This OK by
 Hester
 JPC
 2/6*

NARA II
 RG 326
 Accession:
 48R-326-53-
 012
 Box 55

PH:EM:smh

MARCH 17 1953

Mr. E. S. Morris
Sylvania Electric Products, Inc.
P. O. Box 59
Bayside, Long Island, New York

Subject: METAL QUALITY INVESTIGATION - AMENDMENT TO
CONTRACT NO. AT-30-1-GEN-366.

Dear Mr. Morris:

This is to confirm E. M. Kaulbach's verbal request on March 16, 1953 that you submit a fee proposal for our consideration in connection with metallurgical examinations of uranium metal quality which you are conducting. This information is required in connection with the preparation of an amendment to Contract AT-30-1 GEN-366 to cover this additional work.

Very truly yours,

F. M. Belmore
Acting Director
Production Division

cc: V. L. Parsagian, Research Div.
I. Landes, Office of Asst. Gen. Counsel
E. Kaulbach, Prod. Div.
T. Carberry, Prod. Div.

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4ER-326-83-
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Box 55

NARA 002082

Files
TERESA R. L. Kirk

May 7, 1953

G. E. Dunlap, Chief, Metallurgical Development Branch, Production Division

VISIT TO SYLVANIA MAY 1, 1953
CONTRACT AT-30-A GEN-366

SYMBOL: PM:GHD:mah

Dr. Henry Hauser, Mr. Emerson Morris, Mr. Joe Booh and others discussed with the writer the need for a nickel electroplating laboratory. This laboratory would be suitable for plating full length tubes for flat fuel plates. The cost that Sylvania had recently estimated was \$17,500, of which a portion was construction money. They propose that an enclosure be built in the Hicksville plant equipped with new tanks and other facilities for this purpose.

I told them that the Commission did not wish to build up the Hicksville plant any further at this time and asked if they would consider putting plating equipment which would be suitable for Program A of their flat plate program into the Bayside laboratories. This suggestion did not meet with favorable response. I then suggested that they diligently pursue subcontracting of the electroplating work and met with a rather mixed response on this suggestion. Currently Sylvania has been dealing with Hart laboratories in New Jersey, with General American Tank and one subdivision of their own company for electroplating of tubes. They stated that they had contacted a large number of plating companies without success. It was first implied that the lack of this plating laboratory would delay the flat plate program and Dr. Hauser indicated he wished to inform du Pont to this effect. However, it later developed on a visit to Hicksville that the present plating tank which has been installed there would receive and plate tubes up to 26" in length. Furthermore, it developed that the necessary aluminum tubes will not be available from du Pont for some time. Sylvania could, if they desired: (a) plate 638 aluminum alloy tubes for trial in their present Hicksville plating setup; and (b), subcontract with qualified top plating companies to provide samples of 638 alloy for experimental runs.

I therefore informed them that the New York Office would not approve the construction of a plating laboratory at Hicksville and that if they wished to show us a more economical way out, in writing, we would be happy to receive it. Sylvania will probably submit to us a comparison of the cost of installing this plating laboratory at Hicksville versus Bayside but our position should be to refuse either until adequate efforts have been made to subcontract this plating work.

cc: V. L. Parsegian, Research Div.
T. Carberry, Production Div.

MAY 11 1953

NARA II
RG 326
Accession:
44R-326-83-
012
Box 55

NARA 002083

August 8, 1955

To: R.L. Kirk
Mr. B. Foy Manager

From: E.M. KOVILSACH
Mr. I. Klut, ~~Assistant, Production Division~~

GM - 8 AND 8 - 89 FOR SPERRY PRODUCTS, INC - SUBCONTRACT FOR NON-DESTRUCTIVE TESTING DEVELOPMENT UNDER SYLVANIA PAPER CONTRACT NO. AF(90-1)-GEM-696

STANDARD FRAME

~~Attachments: 1. L. Brounck, Assistant General Counsel~~

In accordance with requirements of GM-8 and 8-89, the following information is presented as justification for Sylvania Electric Products, Inc. (Contract No. AF(90-1)-GEM-696) to enter into a subcontract with Sperry Products, Inc., without formal advertising. Numerical sequence of the following statements corresponds to that shown on Page 1 of GM-8 and 8-89.

1. Sperry Products, Inc., Danbury, Connecticut.
2. Test work is to be conducted at the Research and Test Laboratories of Sperry Products, Inc., Danbury, Connecticut or at Sylvania Laboratory at Bayville, New York, as required.
3. Subcontract No. S-AEC-4 and Amendment No. 1, thereto.
4. Sylvania Electric Products, Inc. at 208-30 Willist's Point Boulevard, Bayville, Long Island, New York - Contract No. AF(90-1)-GEM-696.
5. Destructive sub-contract - Flaw and Materials type.
6. The work will consist of an investigation of ultrasonic inspection techniques applicable to the non destructive testing of flat plate samples supplied by Sylvania. Work to begin on or about July 1, 1955 and to be completed before November 2, 1955. It is anticipated that not more than 500 engineering man hours will be expended, that the rental from time to time of a reflectoscope will be required and that a very small amount of materials (probably under \$500.00 total) will be needed. It is not expected that much travel will be necessary. The work is not to exceed \$4,500.00 maximum on a time and material basis.

7. Formal advertising was not practical in this instance. This is not the type of problem which lends itself to formal advertising because

Production

Encl/Dtach: 4 Kirk

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NARA II

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Box 55

To: Mr. Brounck
366
EK

August 3, 1955

It is not possible to give out detailed specifications covering the work required and much must be left to the individual initiative and discretion of the researcher. Also, this firm has cleared personnel and this is important because the schedule for the flat plate program involved is very tight. Sylvania has requested Sperry to perform the work involved because it is a leader in this field, is located in the immediate area and has the necessary "C" cleared personnel.

8. Not applicable.
- a. Sylvania has informed us that the negotiations were routine in character, involving no significant difference in opinion or unusual aspects. No price changes were involved.
- b. Not applicable.
- c. Not applicable.
- d. Not applicable.
- e. Sylvania states that Sperry is unwilling to furnish a breakdown of the rates or to permit the Commission to examine Sperry's books and records with respect to these rates. Further, Sylvania has stated that Sperry has informed them that the applicable rates are no higher or no lower than those charged by Sperry to the general public for similar work.
- f. Not applicable.
- g. Not applicable.
- h. None, except for the flat plates to be furnished for testing.
- i. Financial condition of proposed subcontractor is considered satisfactory. The subcontract is to be wholly financed by the subcontractor. Certificate of necessity or guaranteed loan are not involved. The accounts under the subcontract are to be integrated with the AEC accounts.
- j. Sperry Products is one of the leaders in the field of non-destructive testing research.
- k. Prime Contract No. AT(30-1)-GEN-566.

Total Amount of Contract	- \$5,846,785
Appropriation Number	- 899/40101.91
Allotment Symbol	- 23-41-01
Sub-program Class	- 0008
Budget Item	- 2801

NAZAI

RG 326

Accession:

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Box 55

H. B. Fry

-6-

August 3, 1953

- l. Delivery requirements are based on the urgency of Sylvania's supplying uranium flat plates to Savannah River as soon as possible.
- m. Pricing aspects of this sub-contract are in accordance with the normal rates which Sperry Products, Inc. charges for this type of work.
- n. R. L. Kirk - Plans 7-5600.

cc: T. C. Garberry ✓
J. C. Clarke, Contract Control
V. J. Del Vecchia

December 6, 1954

W. H. Donnelly,
Contracts Division

W. B. Harris, Chief, Industrial Hygiene Branch,
Health and Safety Laboratory

HYDROSTATIC PRESSING FACILITY - SYLVANIA CONTRACT AT(30-1)-OEM-366

SYMBOL: HSH:WEE

I have examined the Sylvania proposal to locate a high pressure hydrostatic test facility at Hicksville.

From the standpoint of safety, the arguments which they give for placing the facility at Hicksville are good. We would be unwilling to see the facility placed in the farmhouse under any circumstances. There is no objection to the proposed designs from a safety standpoint. It is presumed, of course, that the orientation would be such that the ramp would face away from the populated area.

Enclosure:

Ltr Morris, Sylvania
to Donnelly, 11/26/54.

HSH

HARRIS:rlc

12/5/54

SYL00050532

SAVANNAH RIVER OPERATIONS OFFICE

1. Name and Address

Sylvania Electric Products, Inc.
P. O. Box 59
Bayside, New York

2. Contract Number

Contract AT(30-1)-GEN-366
Appendix "C" Agreement
SROO Sponsored Task C-33

3. Statement of Work

- A. Continuation of the Savannah River fuel and target element development.
- B. Development of a process for reduction of "88"

Note: As of December 31, 1955, that portion of the statement of work referred to as paragraph A, above, has been terminated.

4. Term of Contract

This agreement is effective for the period July 1, 1955, through June 30, 1956.

5. Type of Contract

Cost-plus-fixed-fee

6. Amount of Contract

A. Work as identified under 3 A - Operating Costs	\$ 251,060
Equipment	14,500
Fee	<u>15,060</u>
Total	\$ 280,620
 B. Work as identified under 3 B - Operating Costs	 \$ 108,420
Equipment	12,500
Fee	<u>6,510</u>
Total	\$ 127,430
 Total Obligation	 \$ 408,050

15000
6510

21510

7. Basis of Award

The services for this contract were procured by negotiation because the uncertainty involved in the research and development effort make it infeasible to arrive at a fixed price which would represent a reasonable estimate of the cost of the work.

Sylvania Electric Products Inc. - C-33

8. Payments made as of 12/31/55

	FY 1956
	Actual
	<u>7/1 thru 12/31/55</u>
Fee	\$ 6,051
Cost	<u>101,360</u>
Total	\$107,411

USDOE 000994

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE
 STATUS AND PROGRESS REPORT
 FOR THE MONTHS OF
 JUNE AND JULY, 1956

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SECTION I
NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Office Management

Teletype traffic decreased during the month of July. This reduction was due primarily to the completion of the Pacific tests.

A breakdown of telephone and teletype traffic for the report months is as follows:

	<u>July</u>	<u>June</u>
Local Calls	8,952 cost \$406.60	9,140 cost \$415.06
Long Distance	634 cost \$1,040.58	632 cost \$1,088.95
Teletypes	819	1,017

Procurement

A physical inspection concerning procurement activities was conducted at Nuclear Metals. This completed the Procurement Appraisal Program for Fiscal Year 1956.

Procurement activities during June have been concerned to a considerable extent with advertising for supplies and services which are procured on an annual basis and on which existing contracts expire at the close of the fiscal year.

During June four contracts were prepared for the Brookhaven Area. Contract No. AT(30-1)1915 with Sylvester Sternberg, Inc., in the amount of \$43,236 for furnishing and erecting structural steel and erecting a crane for the Engineering Works Area; Contract No. AT(30-1)1923 with Conco Engineering Works, in the amount of \$32,125, for supplying a crane to the Engineering Works Area; Contract No. AT(30-1)1947 with Malan Construction Corp., in the amount of \$329,000 for construction work for the Engineering Works Area; Contract No. AT(30-1)1924 with Malan Construction Corp., in the amount of \$5,141,879 for construction of the Medical Research Center.

A Procurement Survey was conducted at Columbia University.

Property

Arrangements were made with the U.S. Naval Ammunition Depot, Earle, New Jersey for shipments of contaminated waste during the report months from the following installation:

Pittsburgh Area Office (Westinghouse Atomic Power Division) for the disposal of 194,590 tons

During June arrangements were completed for the acquisition of approximately \$29,724.70 worth of excess property at an average cost of 20%. Savings realized from these transactions approximated \$23,779.83. In July arrangements were completed for the acquisition of approximately \$14,381.84 worth of excess property at an average cost of 15%. Savings realized from these transactions approximated \$11,505.16.

A property management appraisal was completed at Carnegie Institute of Technology (AT-30-1-882). Several recommendations were made and transmitted to the contractor for compliance. A property management appraisal was also completed at Columbia University, (AT-30-1-72). The report is being prepared and recommendations will be transmitted to the contractor shortly.

There were 69 trips made by 5 vehicles during the report months for a total of 5,695 miles travelled.

195.614 troy ounces of pure (99.9%) platinum were shipped out for the two months for a total value of \$19,537.40

The office was represented at a meeting of the Inter-Agency Advisory Committee on Motor Vehicles at the Foley Square Courthouse. The GSA sponsored motor pool will begin operation at three different locations on or about July 1, 1956. The AEC will take active part in the program.

Horizons, Inc., Cleveland, Ohio, was visited to determine feasibility of accepting termination inventory from Savannah River Operations Office. Due to contamination and restoration costs involved, NYOO will not accept complete transfer of accountability for all equipment, but will accept administrative transfer of only that equipment required by NYOO.

Records Management

The University of Rochester, Cyclotron Project, Contract No. AT(30-1)875 was visited to determine the need for a records management program at that installation. The contract is not large enough to warrant a records program at this time, however, the records problems that existed were resolved at the time of the visit.

Records management appraisals were made at the University of Rochester, Contract No. W-7401-Eng-49; Sylvania Electric Products, Contract No. AT(30-1)Gen-366; and Associated Universities, Inc., Contract No. AT(30-2) Gen-16. These contractors are conducting satisfactory records programs. However, recommendations will be made in the formal appraisal report which should increase the efficiency of their programs.

During the report period, 18 visitors availed themselves of Library facilities. Of these, 10 were access permittees.

A total of 90 calls were received from access permittees requesting information concerning AEC reports.

Contracts

Contract Status

Active Contracts May 1, 1956	376
Contract Actions Completed During May, June, and July, 1956	
New Contracts Added	54
Contract Amendments	204
Total Actions	258
Contracts Removed from Active List	8
Net Added	46
Active Contracts July 31, 1956	422

Harvard University, Cambridge Accelerator Project, Contract AT(30-1)-1909. A selection board designated by the Manager selected Charles T. Main to design the laboratory building and accelerator housing. The negotiation board subsequently approved by the Manager completed its negotiations successfully. Harvard and Main have signed the subcontract which has been reviewed and approved by NYOO.

New York University, Computing Center, Contract AT(30-1)-1480. NYU submitted a proposal that the AEC install an IBM 704 computer at the University. A meeting was held with the Vice-President and Treasurer of the University to clarify several points, including the feasibility of installing the equipment in the UNIVAC building rather than in the other building proposed by NYU; the extent of AEC responsibility to pay full amortization for space provided in the event of termination; the duration of the amortization period; AEC rights to use of space; costs for installing the equipment; and costs for repairs and alterations needed for the building. NYU is to submit a revised proposal. Meanwhile NYU has secured an extension of its purchase option for the proposed building until September 15, 1956.

New York University, Subcritical Facility, AT(30-1)-1870.

Negotiations for loan of the fuel material broke down over patents. NYU holds that the proposed AEC patent provisions extend too far, and would sweep in improvements to reactors or other aspects of atomic energy with little direct connection to use of the facility. NYU is considering a counter proposal on patents to limit AEC rights.

Nuclear Metals, Inc., Contract AT(30-1)-1565.

At a negotiation meeting, substantial agreement was achieved concerning provisions for sale of AEC equipment and lease of the Hood Building. NYOO Counsel is writing a final draft of a complete contract action to accomplish this.

In June a fire and safety report disclosing a number of unsatisfactory conditions was sent to Nuclear. A follow-up visit is planned for July. Unless effective correction actions have been taken, or are scheduled, it is intended to suspend work in the areas involved.

There was a small fire on July 26 when molten beryllium spilled on a wooden floor in the foundry area of the Hood Building. The staff was evacuated and sent home. The building was cleaned up and back in operation the following morning. There was no property damage or personnel injury.

NYOO visited the Hood Building July 31, to review safety conditions. The general density of operations, machines and equipment in this building appeared unsafe for long term continued operations. Nuclear was instructed to add no more staff in the building; to reduce the present inventories of fissionable materials as quickly as possible consistent with jobs on hand to less than one kilogram; to take a lease option on 17,000 square feet in a building immediately across the street, and to consider which operations could be moved into this space. The Manager, NYOO plans to personally inspect and evaluate the situation during the latter part of August.

Princeton University, Matterhorn, Contract AT(30-1)-1238.

Princeton withdrew its proposal to sell to the AEC the buildings of the Matterhorn complex. They proposed instead to provide additional general facilities with their own capital. In return, the AEC would guarantee amortization of the Matterhorn complex. NYOO has forwarded this new proposal to Washington and negotiations are now underway.

NYOO met with Princeton representatives and the Chief of the Sherwood Branch to discuss steps leading to construction of the initial phase of the Model "C" complex. Princeton's proposal to undertake preliminary studies of the site selected and the construction is being awaited. The initial phase will involve about \$1,000,000 for construction.

Princeton University, Accelerator Project, AT(30-1)-1916.

Princeton signed the letter contract for this work on June 15. A selection board appointed by the Manager, NYOO, chose Gibbs & Hill as the architect/engineer for design work on the building and housing of the accelerator. A negotiation board appointed by the Manager, NYOO, with representatives from Princeton and AEC, met with Gibbs & Hill. Questions surrounding the architect/engineer's fee proposal and cost estimate which were substantially above reasonable expectations have been resolved. Discussions are also in progress concerning items to be reimbursed through overhead for the Forrestal Research Center. Princeton's Controller has expressed a preference to await the results of various studies of university overhead now going on before reaching agreement on this problem.

University of Rochester, Cyclotron Project, AT(30-1)-875.

Negotiations have been completed with an architect/engineer for preliminary design of a building for nuclear emulsion studies.

Sylvania Electric Products, Inc., Contract AT(30-1)GEN-366.

Sylvania announced its plans to construct a new laboratory. NYOO began review of the implications of Sylvania's announcement of its plans to build a new nuclear laboratory of its own and move its Atomic Energy Division there in about eighteen months. NYOO wrote raising a number of questions, centering about proposed treatment of costs involved. Sylvania had informed us that none of the moving costs would be charged to AEC. Our letter requests a more specific definition now. NYOO also inquired about depreciation rates Sylvania would propose for inclusion in its overhead pool at the new site.

Sylvania was authorized to proceed with construction of a test-cell for hot-hydrostatic pressing at an estimated cost of \$9,200.

There was an explosion at Sylvania on July 2, which damaged AEC equipment, disrupted operations for several days, and caused serious injury to four Sylvania employees assigned to AEC work. The apparent origin of the blast was in thorium fines that were being burned prior to shipment for scrap recovery. A detailed report has been submitted by NYOO to the Director of Biology and Medicine.

Sylvania was instructed to suspend work on the Plutonium Laboratory which was being installed in its Metallurgical Laboratory at Bayside. Sylvania has been requested to propose an alternate site for installation.

Sylvania was authorized to use AEC equipment for work under an Air Force subcontract from Curtiss-Wright. This use is being permitted without charge because the work is related to AEC efforts in aircraft nuclear propulsion.

NYOO inspected Sylvania owned equipment in the Sylvania Laboratory used for AEC work to consider the depreciation which is charged back to AEC

as Sylvania overhead. It was concluded that use of the equipment was necessary for the work and the charge to overhead was thus warranted.

Yale University, Linear Accelerator Project, Contract AT(30-1)-1691.
The Director of Research confirmed a revised statement of scope which was provided by Yale, relating to changes in the building. The contract was modified to state this scope and to provide an interim, partial payment of the increased costs to Yale resulting from this change. The final extent of AEC participation in these increased costs is to be negotiated, balancing the increase in building costs against the change in scope.

A meeting was held to review audit problems. Substantial agreement on remedial action was reached on most points. The estimated completion date for the accelerator was revised by Yale from January 30 to April 30, 1957. Yale has also revised its budget from \$1,500,000 to \$1,828,000. NYOO has referred this change to Washington.

Walter Kidde Nuclear Laboratories, Contract AT(30-1)-1572.
NYOO and D. A. Gilbert, Division of Research, Washington, visited Walter Kidde of Nuclear Laboratories to review the present work status. NYOO is now waiting for Washington instructions on termination of this work.

Manager's Office

June 19, Dr. C. L. Dunham, Director, Division of Biology and Medicine, visited NYOO on way to Oslo with Dr. Harley.

Public Information

During the month of June, the Public Information staff worked with the United States Information Agency and Brookhaven National Laboratory in the photographing of sequences at Brookhaven for a USIA film. A conference was also held with Grant Leenhouts of Cinerama. A press release announcing contracts awarded for the Medical Center at Brookhaven was issued during the month.

The July 2 explosion at the Bayside plant of Sylvania Electric Products, Inc. occupied most of the Public Information staff for the remainder of the month. On the day of the accident, three oral statements and one written press release were issued by NYOO. Sylvania and NYOO statements were coordinated to insure uniformity of fact and information.

On July 10, the Director, Public Information Service, and the Chief of the Industrial Hygiene Branch went to Washington to brief the General

Manager and his staff on the technical facts of the accident and the public relations implications.

A final report was prepared and submitted to the General Manager, with copies to the Assistant General Managers, Washington Division Directors, Operation Office Managers, and Public Information Officers in the field, on July 16.

Press coverage of the incident was sensational and revealed a lack of understanding of the materials involved and the nature of the radiation on the part of many state and city agencies concerned. Latter day stories were written in a more reasonable tone. Close coordination with the Sylvania Public Relations Staff was maintained throughout the month of July.

On July 23, NYOO issued a press release reiterating the facts of the explosion, as well as giving information on the urine analyses performed as a result of it. This release was issued to forestall a sensational story which NYOO discovered was being prepared by one of the New York afternoon papers. This tactic proved highly successful, and the sensational story never appeared.

When the most critically injured of the four Sylvania employees died on the morning of August 8, Sylvania checked its obituary with NYOO. Newspaper stories indicated that the death was the result of blast and burn injuries with no complications from radiation.

During the report period, 107 films from the Information Service's Film Library were shown to approximately 4,708 people.

Security

During the report period, 285 clearances for access to secret data and 215 for access to confidential data were granted to Access Permittees by the Security Division. Requests for 245 secret and 202 confidential clearances were received for processing in the same period.

Technical Liaison

During the report period, 28 new access permits were assigned to the New York Operations Office for implementation. Of access permits already assigned, there were 8 amendments. Of the new access permits assigned in July, 5 of these were granted on a secret basis. This brings the total number of all access permits assigned to NYOO up to 315. Of these, 138 are in the secret category and 177 are in the confidential category.

HEALTH AND SAFETY LABORATORY

Nuclear Safety Review Board

Feasibility Reports

The following feasibility reports were approved by the Nuclear Safety Review Board (formerly Criticality Review Board--changed as per memorandum dated 7/12/56):

NMI-JJP-1 Feasibility Report for Fabrication and Heat Treatment of Zirconium-Clad Enriched Uranium-Molybdenum Irradiation Specimens for APDA

Amendment to Feasibility Reports No. 33 and 34 - Sylvania/NAA

NMI-OLW-1 Supplement 1 to General Feasibility Report for the Fabrication of S3G Type Elements for the Knolls Atomic Power Laboratory

Feasibility Report No. 39 - Dimensional Instability of Uranium - Division of Research, Sylvania Electric Products Inc. (Bayside)

Sylvania Electric Products, Inc. - Feasibility Report for Production of U-Mo and U-Zr Alloys for ANL Irradiation Studies

Sylvania Electric Products, Inc. - Feasibility Report No. 38 Sponsored Task C-4

Sylvania Feasibility Report (Hicksville) DCF No. 1235H - Brookhaven Fuel Elements

Feasibility Report, NMI-OLW-1 for the Fabrication of S3G Type Elements for the Knolls Atomic Power Laboratory

Supplement No. 3 to Feasibility Report No. 36 Sponsored Task C-49

Field Studies

Beryllium Corporation

At the request of the Chicago Operations Office, a visit was made to the Beryllium Corporation at Temple and also to a site located east of Hazleton, Pennsylvania where the company is considering locating a new beryllium facility. The primary purpose of the visit was to review the location from the standpoint of solid, liquid, and gaseous waste disposal, and to review the plans of the company for providing suitable health protection to the workers and to the environment of the new plant.

It was noted that the proposed location is isolated and should be very well suited to the operations of beryllium production. The proposed techniques of solid liquid and gaseous waste disposal and the inplant controls appear to have been thoughtfully prepared, and although they are too preliminary to permit critical judgment of their effectiveness, they seem to be in line with good industrial hygiene practice. It was suggested that plant management consult with local agencies to insure that all regulations pertaining to health are being complied with.

Brush Beryllium

Analytical results of samples taken by Brush personnel at the Luckey plant have been reviewed. The results showed several locations wherein personnel are being over-exposed to beryllium dust; in some cases seriously. An analysis of the results together with recommendations have been transmitted to the Lockland Area Office for their action.

A visit was made to Luckey to review the completion of the recommendations which had been made prior to startup of the plant. A timetable of improvements has been established. The plant will be visited sometime in August to define the exposures.

Columbia University

A Safety and Fire Protection Survey was made in the Van de Graaff area of Columbia University. Several recommendations were made toward improving the integrity of the fire protection in the Van de Graaff area, and also in the storate shed wherein large quantities of paraffin, flammable liquids, radium, beryllium, isotopes, combustibles, and gas cylinders were found. The latter could present a very serious hazard.

Grand Junction Sampling Plant

As a result of finding high uranium in samples of urine of operators of the Grand Junction Sampling Plant a visit was made to the plant to determine the cause of the unusual excretion rate. Air samples were taken at all of the operations in the sampling plant in order to determine locations of possible over-exposure. The plant appeared to be reasonably well ventilated and housekeeping was good. However, analysis of the air samples showed several locations where over-exposures to uranium dust undoubtedly occurs. It has been suggested to Grand Junction that a complete survey of the operations be scheduled.

Interception of Sensitive Materials

Following is a list of the subject areas in which HASL participated under its agreement to assist other Government agencies in the interception and examination of nuclear materials and devices:

Rare Earths Ore Samples	6/6/56
Radioactivity in Cargo of <u>City of Poona</u> , British Freighter	6/9/56
Uranium Ore from Melbourne, Australia	6/4/56
Radium Embedded in Decanter Stopper	6/5/56
Assorted Mineral Specimens from South Africa	6/5/56
Strontium-90 Source	6/1/56
Thorium Metal for France	7/5/56
Iron Ore from Sweden Abroad Mormac-York	7/12/56
Ore Samples from Turkey	7/16/56
Torbernite Crystal from Spain	7/26/56
Niccolite and Carbolite Ore Sample from Iran	7/26/56
Piece of Gold Bearing Ore from Johannesburg, South Africa	7/26/56
Assorted Mineral Samples from Australia	7/26/56

Massachusetts Institute of Technology

A Safety and Fire Protection Survey was made in the Sanitary Engineering and Radioactivity Research Laboratories at MIT. Certain small items were noted which required correction. Recommendations covering these items have been forwarded to the Institute.

Massachusetts Institute of Technology Reactor

At the request of the Contracts Division, a review of the MIT reactor hazards summary report was made. It was pointed out that because this building is already under construction, an additional urgent reason existed for taking steps to remove the Nuclear Metals Operation from the Hood Building. In this already highly industrialized neighborhood, a great deal of damage could result from a chemical explosion. The addition of a research reactor in the area makes the problem even more critical.

Metals and Controls

A visit was made to Metals and Controls Company in Attleboro, at the request of the Schenectady Operations Office. The main purposes of the visit were to review the contemplated operations in the plant, especially with regard to the handling of special nuclear materials, and also to review in detail the waste disposal procedures which are contemplated. Suggestions regarding the various aspects of waste handling were made, and also an offer to assist the management in having these procedures cleared by local authorities.

New York University

A Safety and Fire Protection Survey was made of the UNIVAC operation. Several items having to do with increasing the protection against high voltage and fire hazards were noted, and recommendations for the correction of these items have been forwarded to the University.

Norton Company

At the request of Chicago Operations a visit was made to the Norton Company to review their procedures for handling special nuclear materials. The work which they contemplate involves the pressing and firing of an enriched uranium thoria mixture. The facilities were inspected, and a short talk was given to the operators on the unusual hazards involved in the handling of special materials. The details of the operation were reviewed and suggestions were made for safe practices.

Nuclear Metals

A Safety and Fire Protection Survey was made at the Nuclear Metals Operation in the Hood Building in Cambridge. As usual, a large number of small safety violations were noted. Although this plant is reasonably safety conscious and does make a considerable effort to keep the place in good shape, the conditions of operation and the condition of the building make this extremely difficult.

In the course of the visit, the following items were among those noted: (1) general deterioration of housekeeping, (2) poor storage of flammables and acids, (3) inadequate high voltage protection, (4) cluttered aisles, and (5) jury rigged protective devices, and so forth. Recommendations were forwarded for the improvement of conditions.

A small fire was ignited on the floor of the mezzanine section in the Nuclear Metals foundry. The fire resulted from the accidental spattering of some molten beryllium as it was being poured. The droplets ignited several small fires which were quickly extinguished with dry powder extinguishers. The dry powder flowed throughout the building and created the illusion of possible berillia fume. The building was completely evacuated, and after about an hour all personnel except those involved in clean-up were sent home. The clothing which was used in the building was gathered for laundering. Air samples were taken about three hours after the incident, and switches and sweeping of settled material were collected. The samples were analyzed in this office and showed the following: (a) All air samples, with one exception, were below the limit of detection. This one sample analyzed approximately 0.5 ug/M^3 . (b) With the exception of a couple of floor sweepings, the settled material contained essentially no beryllium. One of the sweepings from the mezzanine floor showed small amounts of beryllium.

The incident was immediately reported to Washington. The incident occurred on Friday and by Monday morning all work was resumed as usual.

A visit was made to the Hood Building to discuss the handling of scrap materials. Although the handling of these materials had been settled in a previous visit, several things have since occurred which tend to upset the original decision. These are: (1) the refusal of National Lead to

accept any scrap uranium which contains zirconium. This is a result of the Oak Ridge zirconium powder explosion. (2) The Sylvania incident makes the storage of scrap even more undesirable than before.

As a result of our discussions, recommendations were transmitted to the Hood Building which should permit safe handling of all scrap materials. These included the erection of an exterior scrap storage building and clearance of all scrap materials from inside the building on a daily basis. Permission has been granted to Nuclear Metals to sea dispose the potentially dangerous uranium and thorium.

Operation Redwing

The telemetering function at PPG was deleted because of equipment difficulties. The data was instead transmitted by voice with plane position and radiation reading given. With two planes in operation the transmissions were staggered at three and six minute intervals respectively for the close-in and the distant plane. This method is satisfactory but does not provide the detail expected of the telemetering mechanism.

Continuous seawater activity measuring equipment was installed on the Destroyer Escort Walter. Initial reports indicated good operation although contamination of the tank brought new problems. According to reports the addition of sea water in the tank provided an attenuation factor of 3 over a normal background reading of approximately .01 mr/hr. After the equipment is in use for several days the contamination in the tank increases to 10 times the original background before sea water insertion. This contamination level can be reduced by washing the tank interior with a detergent, after which the background level drops to the normal value.

University of Rochester

A Safety and Fire Protection Survey was made at the Atomic Energy Project Laboratories at Rochester University. In general, the laboratory was found to be reasonably well maintained, but there were several items noted which could lead to trouble. These included mainly the handling of flammable liquids which were found rather promiscuously distributed without adequate control and several small items pertaining to mechanical safety protection. Recommendations have been transmitted to the management for the correction of these conditions.

Sylvania Electric

On July 2 a serious explosion occurred at the Sylvania Electric Products Metallurgical Laboratory in Bayside. The explosion injured four people, one of whom subsequently died, and resulted in considerable damage to the building and to equipment. HASL personnel made a thorough survey of the

area, inside and outside of the plant, to establish levels of radiation and of airborne radioactive materials. Despite the fact that considerable stress had been placed on the possible existence of such material, no significant findings were reported.

A thorough investigation was made of the incident, and reported to the Commission.

Projects

Cooperation with New York State Department of Labor

During the period under review, arrangements were made for the New York State Department of Labor to receive Health and Safety Laboratory radiation detection instruments under the Instrument Recall Program. The instruments will be used in the New York and Buffalo offices of the New York State Department of Labor. It is understood these instruments are to be supplied on an interim basis until the Department of Labor is adequately equipped with its own instrumentation. Similar cooperation has been offered to other nearby State and local agencies.

Equipment for Mallinckrodt

The system for use at the Weldon Springs Plant will have the same general characteristics as the one to be designed for the Analytical Branch here. Automatic changer mechanisms units are in construction at the vendor's plant and should be completed during August with the electrical accessories scheduled for a later time.

F.C.D.A.

Work has continued on design of a scintillation survey meter for aircraft use. Electrical circuits have been worked out satisfactorily and mechanical layout is proceeding. No commitment has been received from FCDA regarding funds for this instrument or the radio altimeter.

Image Minifier - Scanning Tube for Gamma Ray Radiography

A directive has been received to place the development work with the A. B. DuMont Laboratory. The initial phase will cover only the design of an image minifier (image reducer structure) to go from a 27 or 30 inch diagonal image down to a $1\frac{1}{2}$ inch to 3 inch diagonal image. Only initial design work has been started.

Instruments

A new contract has been negotiated with the A. B. DuMont Laboratories to cover work on photomultiplier tubes for the next year. This contract will include work on fast structures, improved mounting structures for

large tubes to permit the use of liquid phosphors without intermediate gasketing and seal problems. Improvements in cathodes, secondary emission surfaces and electrical insulation are projected as well.

Proposals have been secured on the image intensifier tubes and the present indications are that the contract will be awarded to the A.B. DuMont Laboratories. The present opinion points toward construction of design of tubes with 30" diagonals in preference to the 20" diagonal in order to improve the image size. Since the cost of development and fabrication at this stage will be no greater and since the image area will be increased by a factor of approximately two, major benefits are expected.

There has been no success in securing any large glass manufacturers to aid in fabrication of scintillation phosphors made of glass. On the other hand, it is possible that one of the smaller glass manufacturers will be interested, and offers will be made to them. A contract to NYU is being negotiated to cover a solid state study of the phenomena.

Mercury Vapor Detector

Initial design work has been activated on a transistorized power supply for the mercury vapor detector. The major problem lies in the lack of a good air mover for the one liter per minute volume desired. With the transistorized high voltage supply the current drain is less than 100 ma at 6 volts; all commercial fans and blowers require from 1/2 to 1 ampere at 6 volts. The matter is being studied but it is expected that a good fan design would be evolved.

Proposed Electron Linear Accelerator - Yale University

On July 20 the Assistant Chief, Radiation Branch visited the electron linear accelerator group at Yale University to discuss the shielding required for a new 40 MEV linear accelerator now at the stage of preliminary negotiation.

This machine will be a high current machine primarily for the production of fast neutrons by the gamma-N reaction in Uranium. The estimated X-ray output of this device will be 10^6 rad per minute at 1 meter with an approximate neutron output of 10^{14} neutrons per second.

The shielding of the linear accelerator is essentially 6 feet of ordinary concrete. If the accelerator achieves the energy and beam current anticipated, it is adequate. It was recommended that ultimate attenuation requirements over and above the present shielding await the performance of a radiation survey which will indicate the precise quantity of additional shielding required.

Punch Card Data Reduction

Work is proceeding on the adaption of the IBM punch card mechanism to all the automatic counting systems in the Analytical Laboratory. The data storage dekatron counting modules, the accessory equipment and a large portion of the relay circuitry, to be used at each stage, has been designed. Fabrication of 300 modules will continue in August and should be completed before the end of the month. Other design criteria are being evolved and it is expected the system will be constructed in the laboratory in the latter part of this year.

Special Training

Mr. James McLaughlin, Jr. of the Radiation Branch concluded his training at BNL in reactor and critical facility technology. Mr. McLaughlin has left for a period of two months at which time he will be on duty at the National Reactor Testing Station, Arco, Idaho.

Stratospheric Air Sampler

Work has been completed on the laboratory testing of the stratospheric air sampler. A complete report covering the experimental work, entitled "Experimental Collection Efficiency of a Stratospheric Air Sampler" has been published and forwarded to the interested parties.

Training of Coast Guard Personnel

At a meeting held in Washington on May 31, 1956, it was agreed that the New York Office would explore the feasibility of setting up a training course for Coast Guard personnel engaged in the Port Security Program. Conversations with BNL authorities indicated that BNL would be willing to arrange such a program if it did not conflict with other commitments. An exploratory meeting was held on June 12, 1956, and included representatives of the U.S. Coast Guard (Captain F. K. Johnson); Hanson Blatz, NYOO; J. Kelly, DMA, Washington; and Gordon Stubbings, BNL Area Office.

Approximately 200 Coast Guard personnel would require training to utilize the special instrumentation which will be available next fall or winter. It was decided that a suitable approach would be to select 12 to 15 OCS reserve officers with scientific background to be given intensive training in all aspects of the problem. Each of these officers would be assigned to one of the Coast Guard areas to train other personnel involved in the Port Security Program. Tentative arrangements call for a course of one to three weeks duration in the Fall or Winter of this year.

Detailed administrative aspects of this program are being reviewed to assure concurrence of all agencies concerned and to comply with necessary security requirements.

* * *

Equipment is being fabricated for the IBM punch card set up. The progress is in accordance with schedule with no major difficulties appearing.

All laboratory equipment has been placed in operating condition and is now being maintained. The radon apparatus has been reworked and the previous low background levels have been reached or reduced with satisfactory operation reported throughout.

The initial draft of Chapter I of Volume III of the Reactor Handbook, prepared as a group effort by the Health and Safety Laboratory, has been transmitted to the editors.

Laboratory Work

Fallout

10,218 fallout samples were processed during this period.

Radiation and Surface Contamination Surveys

The total number of film badges processed for the months of June and July, 1956 is 5,048.

Instruments Repaired - 50
Instruments Calibrated - 72
Instruments Checked for Contamination - 23

With respect to the Sylvania-Bayside blast on July 2, continued analyses for urinary uranium have been run on the hospitalized personnel and the results show a continuing decrease as expected from previous experience. Thorium analyses are not complete and a summary analysis report will not be written until this data is ready. Approximately 420 samples were analyzed for urinary uranium.

Miscellaneous Personnel Activities

Committee Participation

AEC Manual

A meeting was called by the Division of Production in Washington for the purpose of discussing a revision of Chapter 5182. The meeting was generated by the work recently done by this office on the decontamination of stainless, nickel and copper scrap, and also on conferences held with the National Association of Photographic Manufacturers on the possibility

of releasing contaminated scrap into commercial channels. Drafts of revised chapters which would include the disposition of stainless, nickel, and copper, and also of equipment were agreed upon at the meeting. These drafts will be published in the very near future.

National Congress of Radiology

The Chief of the Radiation Branch represented the Health and Safety Laboratory at the International Congress of Radiology in Mexico City from June 21 through June 28. A compilatory study performed by the Radiation Branch on gonadal doses received during diagnostic X-ray procedures was distributed at the meeting.

New Jersey Governors' Committee on Radiation Protection

On June 22, the Chief of the Radiation Branch attended a meeting of the Governors' Committee on Radiation Protection.

* * *

On June 6, John Harley, Ira Whitney, and John Alercio attended a meeting with respect to the current platinum inventory and devising a better system for taking inventories.

On June 12 through June 14, a representative of the Radiation Branch (J.E. McLaughlin, Jr.) participated in the Joint U.K.-U.S.A. Meeting on Reactor Hazards at Chicago, Illinois.

On June 22, Jim Fresco attended a meeting in Washington with respect to the comparison conducted by the Armour Research Foundation of fallout sampling.

On June 26 (in Washington) and on June 29 (in New York), the Chief of the Radiation Branch met with a representative of the AEC-OGC to make what is anticipated to be the final revisions of 10 CFR Part 20.

On June 27, Ira Whitney and H. DiGiovanni met with Capt. L. Stone and Mr. C. E. Heidt of the Air Force (Cambridge, Mass.) with respect to high altitude measurements.

On June 27, the Assistant Chief of the Radiation Branch presented a paper to the second annual meeting of the Health Physics Society entitled, "Measurement of the Scatter Component from Kilocurie Cobalt-60 Source" (L. Solon, K. O'Brien, and H. DiGiovanni). A paper on "Decontamination of Non-Ferrous Metals (Klevin and Harris) was also delivered by W. B. Harris.

During the week of July 23, Jim Fresco and Si Licht participated in a resurvey of the Stockton, New Jersey area to collect and analyze water

samples. Previous surveys, under the direction of Jack Kratchman, Geologist, Raw Materials Division, Washington, were conducted during November, 1955.

During the week of July 30, George Welford and Doris Sutton attended the Gordon Research Conference on Ion Exchange in Meriden, New Hampshire.

Visits by HASL

On June 24-26, John Harley visited the Atomic Energy Research establishments at Harwell and Woolwich to discuss interlaboratory analyses of milk, fallout summaries, etc.

On June 28, the Assistant Chief of the Radiation Branch lectured to a group of 40 firemen participating in a course at the Fire College on radiological monitoring.

On July 24, John Harley attended an ESSO Executive Group meeting at the ESSO Relocation Center in Morristown, New Jersey, as part of Operation ALERT. He discussed fallout in general non-technical terms from a viewpoint of both immediate and long-term hazards and possible counter measures.

William Harris attended a meeting called by the Denver Research Institute and Atomic Industrial Forum in Denver. He presented a paper on "Radon Exposures in Mines".

Visits to HASL

On June 5, Ed Palmes of New York University visited John Harley and Ed Hardy to discuss soil sample analysis.

On June 7, Eduardo Ramos (Rodriguez), UN Scientific Committee on Radiation Member from Spain, visited the Laboratory.

On June 13, Dr. Umberger and Mr. Leo Dal Cortivo of New York University visited John Harley with respect to the current contract on trace analysis in biological specimens.

On June 13, Bob List of the U.S. Weather Bureau visited John Harley, John Whitnah, and Dr. Brandt to discuss the fallout network.

On June 14, Steve Wiberly, together with Bob Osteryoung and Ray Meyer of Rensselaer visited John Harley to discuss a timing device for army aircraft equipment.

On June 21, Dr. E. A. Watkinson of the Canadian Atomic Energy Installation visited Ira Whitney to discuss Canadian fallout and the setting up of an inter-laboratory comparison of U.S.-Canadian milk.

On June 21-22, Dr. Alan Lough, Consultant, talked to Ira Whitney with respect to the overall Sunshine Program.

On June 26, Dr. Gentry and Dr. G. Bullin of the New York State Department of Health talked to Ira Whitney with respect to measurements of radioactivity in water, soil, and airborne dust.

On July 9, Dr. Aldo Forcella visited Naomi A. Halden to borrow a thulium source and to discuss the subject of possible gamma sources.

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SECTION II

BROOKHAVEN NATIONAL LABORATORY
MONTHLY STATUS AND PROGRESS REPORT
FOR JUNE AND JULY 1956

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

A. Construction - During the month of June all pile driving, including the sheet piling for the Target Area, was completed. On the Service Building, all roofing and interior block partitions were erected and interior painting was started in July. Eleven bids for the Magnet Enclosure and the Linear Accelerator Tunnel concrete work were opened on June 28. The apparent low bidder, White Construction Company, was given a conditional Notice of Award for the construction of the Tunnel. It is expected that the contract will be executed during the early part of August.

B. Design

Buildings - Stone and Webster was authorized to proceed with design of External Shielding, Land Improvements and Machine Cooling. Design of the Magnet Enclosure, mechanical work on the Linac Building and the Target Building is 75% complete.

Machine - The General Electric proposal for the Magnet fabrication was withdrawn at their request in order that they may submit a complete package proposal including responsibility for procuring the Magnet steel. Definitive specifications on the main power supply were furnished to Westinghouse, General Electric, and Allis-Chalmers. A prototype mechanical model of a linear accelerator section was received and was being tested at month's end. A prototype model of the electrical RF section for the Linac was also received and is being tested.

Medical Research Center

A contract for the construction of the Medical Research Center was awarded to the Malan Construction Corporation in the amount of \$5,141,879 on June 7, 1956. Malan moved on to the job and started construction officially on June 21. A detailed progress schedule for the Medical Research construction is being developed with the Contractor. A determination of the effect of the steel strike on the over-all job progress will be made.

Engineering Works Area

A contract for the construction of the Engineering Works Area was awarded to the low bidder, Malan Construction Corporation, on June 22, 1956, in the amount of \$372,236 which includes the assignment of the contract

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previously placed with the firm of Sylvester Sternberg for furnishing, fabrication, and erection of structural steel and also \$1,210 for the erection of the Engineering Works Area crane, to be furnished by Conco Engineering. Actual construction was started on July 27. Progress schedule for this job is being established with the Malan Construction Corporation and the effect of the steel strike upon the previously predicted completion date will be analyzed.

Cosmotron

The past month has seen an increased use of the external proton beam. Several bubble chamber runs have been made using the external beam. These experiments have necessitated the erection of rather bulky concrete block houses to shield the chamber.

For the past year the Cosmotron has been inspected every eight hours and the operators, at this time, listen for new sounds from the magnet that may reveal changes. Recently, new sounds have developed that indicate a general loosening of the structure as a result of nearly six million pulses. They do not, however, suggest a critical condition that calls for immediate remedy.

18" Cyclotron

A major portion of June was spent relocating the control console and experimental electronics circuits in order to get the personnel involved out of the path of the external beam from the Cosmotron. With their present location in the far northwest corner of the test shack, it should now be possible to operate the machine most of the time during external beam operation of the Cosmotron.

However, since the present conditions of high humidity interfere with the smooth operation of this machine in its present location in the test shack, it was decided to cease operation altogether and make careful checks this summer on the shape of the magnetic field. When the oscillator frequency was increased from 18 megacycles to 20 megacycles last spring, the resulting particle energy did not rise to the values expected. This has now been attributed to non-uniformities in the shape of the magnetic field. It was found that there is a serious azimuthal field distortion and some time will be spent in correcting this.

Contract Actions

1. The agreement between the AEC and Wright Air Development Center was signed by both parties during the month of June. In accordance with the terms of the agreement, the Air Force will continue the Shielding Development work formerly conducted by Brookhaven National Laboratory under activity No. 4570.

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2. Negotiations continued with Babcock and Wilcox for the LMFR-E. A draft definitive contract, dated June 15, 1956, was sent to Babcock and Wilcox. At a meeting between AEC and B&W, held on June 22, the parties considered the detailed terms and conditions. The areas of disagreement regarding clauses for patents, copyrights, and hold harmless are being pinpointed and subsequent negotiations should find these resolved between the parties. B&W people met with the Laboratory staff on July 10 and 11 for the purpose of general orientation on liquid metal fuel subjects.

3. The last obstacle in obtaining a Fotosetter at Brookhaven was surmounted by the signing of an agreement with Brookhaven and Intertype Corporation in June.

4. Modification No. 29 to the Associated Universities, Inc. prime contract was signed by both parties providing initial operations for F. Y. 1957, together with several plant and equipment projects and working fund provided for in the F. Y. 1956 financial plan. The tentative operating levels including equipment for F. Y. 1957 are as follows:

Program 4000	4,610,000.
Program 5000	8,109,000.
Program 6000	<u>2,962,000.</u>
Total	15,681,000.

5. T. H. Johnson, Director, Division of Research, Washington, D. C., visited the Area Office and Brookhaven National Laboratory on July 26 and 27, to review the Physics Program and consider important proposed budget changes.

Summer Program

About 90 scientists from about 50 different educational institutions are working at the Laboratory this summer for periods of 1 to 3 months. Half of these receive their primary financial support from other sources than the Laboratory. 14 come from other countries. About 20 graduate students are being brought to the Laboratory by these visiting scientists to work as their research assistants.

Applications for the formal Summer Student Program were received from 400 students representing 115 different colleges and universities. 105 appointments were offered to 45 graduate students and 60 undergraduate students. Of these 90 accepted and are now working at the Laboratory.

There are also 14 Radiological Physics Fellows at Brookhaven National Laboratory for the usual field training part of their program. 3 aliens sponsored by their respective governments have also been admitted to this course.

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Including the 30 faculty members from engineering schools coming to the Institute for Nuclear Engineering starting July 2, the total influx for the summer will consist of about 120 scientists and an equal number of students.

Reactor Hazards Summary Reports

Two Brookhaven Reactor Hazards Summary Reports were forwarded to Washington for approval by the Reactor Hazards Evaluation Staff in June. The reports are "Medical Research Reactor Hazards Report" and a "Hazards Summary Report on the Enriched Fuel Element Loading for the Brookhaven National Laboratory Research Reactor".

Research Reports

During June and July 72 papers were approved for publication. This number included 37 on physical sciences, 28 on life sciences, and 7 on applied and general subjects.

Visitors

The Laboratory was visited during the above period by the following, among others:

General Eduardo Hernandez Vidal, Dr. Jose' Maria Otero, and Jose' Vergara of the Spanish Nuclear Energy Commission on June 1.

Marcel Huberlant, Andre Point, and Emanuel Neve de Nevegnies from the Belgian Centre of Nuclear Applications on June 13.

Guido Colonna, Italy; Pierre Huet, France; Einar Saeland, Norway; Bertrand Larcher, France; of the Organization for European Economic Cooperation accompanied by representatives from the State Department on June 13.

Henry Tasca, Minister for Economic Affairs of the American Embassy in Bonn, on July 3.

USDOE 001019

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

UNITED STATES ATOMIC ENERGY COMMISSION

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

AUGUST, 1956

Prepared by the Staff
of the
New York Operations Office
September 25, 1956

USDOE 001020

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

AUGUST, 1956

SECTION I - NEW YORK OFFICE

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Office Management

Arrangements were made at the Air Force Cambridge Research Center, Bedford, Massachusetts for the assignment of space there to Nuclear Metals, Inc. at 224 Albany Street, Cambridge, Massachusetts.

Procurement

A procurement appraisal was conducted at Sylvania Electric Products, Inc.

Property

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for shipments of contaminated waste from the following installation:

Pittsburgh Area Office (Westinghouse Atomic Power Division) for the disposal of 73.483 tons.

The annual contaminated waste disposal program for ENL was carried out this month. 620 drums of contaminated waste were dumped at sea from Floyd Bennett Field, through the cooperation of the Third Naval District, U. S. Navy. Also disposed of at this time were several items of contaminated waste for Sylvania Electric Products, Inc. Contract AT-30-1-Gen-366.

The U. S. Naval Ammunition Depot, Earle, New Jersey was visited for the purpose of inspecting the U. S. S. Calhoun County (LST 519) to determine recent contamination of the ship during disposal of contaminated wastes at Earle. Discussions were held with Commander W. J. Miller and Lt. Commander E. Ambroziak in charge of the Ordnance Division at Earle and responsible for the handling of radioactive waste and its loading on the ship, as well as Capt. E. C. Hawk, Commanding Officer of the Depot, and Lt. H. R. Hern, Commanding Officer of LST 519.

As a result of these discussions a brief basic training in radiation monitoring will be given at Brookhaven National Laboratory in October to one or two of the men at Earle and a trained officer of the ship.

Records Management

A records management appraisal report was issued covering the records program being conducted at the University of Rochester. The overall program was reported as satisfactory with minor exceptions which were brought to the attention of the contractor.

Contracts

Accelerator Cost Controls. At the request of the Director of Research, NYOO met with him and representatives of the Controller and the Director, Construction and Supply, to review cost controls to be applied to the accelerator projects at Princeton and Harvard. The controls proposed by NYOO were favorably received. NYOO is to work out with each project director cost controls and realistic estimates for the principal components.

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909. The architect-engineer subcontractor, Charles T. Main, Inc., began work for design of the laboratory building. In mid-August Harvard submitted a proposal to the Director of Research, Washington for an additional floor in the laboratory building, more space in the target area, and additional shielding. The estimated cost was \$740,000.

New York University, Computing Center, Contract AT(30-1)-1480. NYOO submitted to the Division of Research, Washington the principal terms of an expected revised proposal from the University for purchase and alteration of a building to house the IBM 704 computer.

Nuclear Metals, Inc. Contract AT(30-1)-1565. Nuclear and NYOO agreed to relocation of a substantial part of the metallurgical laboratory activities from the Hood Building to another nearby government-owned building. All of the administrative offices, the library, the foundry, some storage, and some laboratory activity will be moved. The Manager, NYOO visited and inspected conditions at the Hood Building and approved these proposed relocations. The principal effects of this change will be to remove storage of fissionable material from the Hood Building, to reduce the number of people working there by about 70, and to relieve congestion of machines and equipment. The activities selected for moving were those that could be shifted with least cost.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238. NYOO received Washington approval for Princeton's proposal for additional general facilities at the Matterhorn complex. Princeton will finance the new construction. NYOO will guarantee amortization.

Princeton University, Accelerator, Contract AT(30-1)-1916. The architect-engineer, Gibbs and Hill, began work under a letter of intent pending completion of negotiations with Princeton for a definitive subcontract.

Rochester Cyclotron Project, Contract AT(30-1)-875. NYOO approved Rochester's contract with the architect-engineer firm of Waasdorf and Northrup for preliminary design of the nuclear emulsion laboratory building.

Walter Kidde Nuclear Laboratories, Contract AT(30-1)-1572. NYOO is proceeding with termination of the contract as requested by Washington. Kidde has submitted an estimate of costs as a basis for this action.

Yale Linear Accelerator, Contract AT(30-1)-1691. NYOO met with Yale and negotiated a revision of AEC participation in the building costs for housing the accelerator. A contract modification is being drawn up for this.

Manager's Office

August 21, John Hall, Director, International Affairs visited the Manager to discuss the activities of the International Affairs Division.

August 23, J. B. Kelley, Department of Commerce visited the Manager to discuss the Sylvania accident.

August 27, Frank Smallwood, Administrative Assistant to A. Tammaro, AGM for Research and Industrial Development, Dr. C. L. Dunham and H. C. Brown, Jr. of the Division of Biology and Medicine visited the Manager to discuss NYOO matters.

Organization & Personnel

NYOO served as a trail office for the forthcoming AEC Functional Manpower Survey. Gregory Abdian, Management Specialist of the Division of Organization and Personnel, Washington visited New York, and with his assistance functional coding of all NYOO personnel was completed.

A preliminary discussion meeting was held with Sylvania Electric Products, Inc. relative to their request for an indemnity agreement to protect them for any uninsured liability which might arise out of the use of nuclear materials. Sylvania is to submit a formal request.

The Oil, Chemical and Atomic Workers Union won a consent election to represent the pile operators at the Brookhaven National Laboratory. The vote was 16 to 1. No date has been set for negotiations.

Public Information

During the report period 20 films from the Information Service's Library were shown to approximately 880 people.

No major projects were undertaken and press and general public inquiries

were of a routine nature. One press release was prepared by NYOO Public Information Service for use by the United States Mission to the United Nations regarding the transmission of the report "Radioactive Fallout Through September 1955" to the United Nations Scientific Committee on the Effects of Atomic Radiation.

Technical Liaison

During the month of August, 1956, there were 12 new access permits assigned to NYOO. Of these 12, 8 were for access to Secret, Restricted Data. In addition, there were 10 amendments to access permits already granted, changing these permits from Confidential to Secret. The total number of access permits assigned to NYOO is now 327. Of these, 156 gives access to Secret, Restricted Data.

Security

During the report period, 143 clearances for access to secret data and 73 for access to confidential data were granted to Access Permittees by the Security Division. Requests for 128 secret and 58 confidential clearances were received for processing in the same period.

Health and Safety Laboratory

The press of work in the Laboratory during July made it necessary for many staff members to schedule their vacation during August. Therefore, there is little activity to report for that month and the work which was conducted will be covered in the next report.

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SECTION II

BROOKHAVEN NATIONAL LABORATORY
MONTHLY STATUS AND PROGRESS REPORT
FOR AUGUST 1956

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

The Service Building is rapidly nearing completion. Installation of mechanical equipment for building services, including air conditioning, is well advanced. Final grading for the area adjacent to the Service Building has been started.

The White Construction Company proceeded with form and reinforcing work on the Tunnel and at month's end, had completed their initial concrete pour. Notice of impending bidding for the Linear Accelerator and Target Buildings was mailed to a list of some 50 contractors and to several of the commercial construction trade papers.

Medical Research Center

At month's end excavation was 85% complete, concrete footings 53% complete, and concrete foundation walls 12½% complete. It appears now that structural steel will start arriving on the job for erection about October 15, 1956.

Engineering Works Area

Construction proceeded with excavation of column footings. Form work was started and a token amount of concrete poured for footings and column piers. It appears that the steel strike will affect completion date of this project by approximately two months.

Cosmotron

A great many experiments have been performed with negative pions in the past because these particles are bent outward from the Cosmotron magnet due to their negative charge and are readily available. High energy positive pions, on the other hand, have not been studied because these were not available in a beam of appreciable intensity. By allowing the external proton beam to strike a target of liquid hydrogen it was found that at about 7° to the incident proton beam high energy positive pions are produced in such numbers that a focused beam could be formed containing two 1.3 Bev positive pions for every proton of the same momentum. The intensity of this beam is ample for bubble chambers, and experiments using this new source of high energy particles are now being planned.

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Due to a shortage of operators the Cosmotron is now being operated on only two shifts (8:00 A. M. to 12:00 Midnight).

18" Cyclotron

The past month has been spent entirely on magnetic measurements. It has been found impossible to correct properly the magnetic field by simple shimming between the present pole-tips and the fixed poles of the magnet. Originally, a satisfactory field had been obtained by soldering thin pieces of iron to the surfaces of these pole-tips. An existing pair of spare tips have been machined with as nearly plane-parallel surfaces as possible in the heavy machine shop. Measurements of the azimuthal and radial field variations at different magnetic currents have indicated that a satisfactory azimuthal field could be obtained by simple tilting of the tips relative to the fixed poles. These tips are now being modified in the machine shop to provide a $\frac{1}{4}$ " gap between each tip and its fixed pole. It is believed that the required field configuration can be obtained for different magnet currents by the insertion of shims in this gap.

Contract Actions

Babcock and Wilcox signed the Liquid Metal Fuel Reactor Experiment contract on August 31, 1956. Babcock and Wilcox is returning the contract to the New York Operations Office for transmittal to Washington.

Foreign Scientists at Brookhaven

The program at Brookhaven this summer has taken on an international flavor. There have been about 45 foreign scientists working here for continuous periods extending from two months to more than a year. They have come from 20 different nations as follows:

Argentina	1	France	2	Norway	2
Austria	1	Germany	4	South Africa	2
Belgium	6	Greece	1	Spain	2
Canada	2	India	1	Sweden	1
China	3	Israel	3	Thailand	1
England	2	Italy	3	Yugoslavia	1
Egypt	2	Japan	5		

Their distribution among the Departments at the Laboratory is:

Accelerator Development	1	Medical	3
Biology	7	Nuclear Engineering	7
Chemistry	9	Physics	12
Cosmotron	7	Reactor	1
Health Physics	3		

In addition to the above, there are 5 working here continuously who are in an immigrant status, and 12 other scientists of foreign citizenship who work at Brookhaven intermittently.

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Conversely, a number of Brookhaven scientists have visited the laboratories in other countries. Besides the team which visited the Colombo Nations under the leadership of Dr. Fox, 18 staff scientists have attended international conferences in Europe this summer. Most of them presented papers at these conferences by invitation. Two of them visited the U.S.S.R.

This international communication directly between researchers has proved stimulating to the research activities at Brookhaven National Laboratory, and tends to promote a better understanding with peoples of other lands.

The cooperative program designed to produce useful mutations in agriculturally important plants and trees has expanded to include a number of foreign countries. Active cooperation with Canadian institutions begun last year, has resulted in a total of 17 studies. Cooperative projects have been initiated with scientists in Australia, Cuba, Italy, Mexico, Pakistan, Peru, The Phillipines, Rumania, Thailand, Venezuela, and West Germany. It is likely that this foreign cooperation will increase considerably.

During the month of August alone, the Laboratory has had 26 visitors from other countries representing 14 different nationalities.

Research Reports and General Publications

During the month 20 papers were approved for publication. This number included 14 on physical sciences, and 6 on life sciences. In addition, the Brookhaven National Laboratory Quarterly Progress Report for the first quarter of 1956 was published.

Visitors

The Laboratory was visited during the above period by the following among others:

Mohamed Aslam of the West Pakistan Government on August 24th.

Maurtitz Hoyertz of the Swedish Atomic Energy Commission on August 1st.

Hiut Rosado and Saldantra Derzi of the Brazilian Congress on August 2nd.

45 Students from the International School of Nuclear Science and Engineering on August 16th.

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

SEPTEMBER, 1956

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Procurement

A Procurement Appraisal was made at the Brookhaven National Laboratory.

A traffic survey of NYOO was conducted by M. Harrington, Construction and Supply Division, Washington. One day was spent at Brookhaven National Laboratory.

Property

Arrangements were made with the U.S. Naval Ammunition Depot, Earle, New Jersey for shipments of contaminated waste from the following installations:

Chicago Operations Office

Pittsburgh Area Office (Westinghouse Atomic Power Division)
for disposal of 164.8975 tons

Hartford Area Office (Pratt and Whitney Aircraft Corp.)
for disposal of 6.2015 tons

New York Operations Office

Sylvania Electric Products, Inc. - Contract AT(30-1)366
for disposal of 4.65 tons

Property Management Appraisals were conducted at Nuclear Metals, Inc. Contract AT(30-1)-1565 and University of Rochester - Contract W-7401-Eng-49 and AT(30-1)875.

Records Management

A records management appraisal report was issued covering the records program being conducted at the Brookhaven National Laboratory. Considerable improvement was noted during the past year, indicating that the overall program is progressing satisfactorily. To increase the efficiency of the program certain recommendations were made to the contractor.

Contracts

Accelerator Cost Controls: Members of the Contracts and Technical Liaison Divisions met with both Harvard and Princeton to explain the construction directive system and to present the NYOO plan for reporting and control of costs. There is some objection on the part of the Universities to the distribution of scientific and technical labor costs to the design and construction of each of the machine components.

General Electric, Proposed Contract AT(30-1)-1963: Negotiations were begun with GE for research and development of certain capacitors needed by the Sherwood Program. GE is resisting inclusion of AEC rights to background patents and "know-how."

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909: The Contractor requested approval for the purchase of the first major equipment item. This was an r.f. power supply unit to be used initially for test and development work, and, according to the Contractor, will be used later to power the machine up to electron energies of 5 BEV. NYOO requested that additional terms and conditions be written into the specifications.

New York University Computing Center, Contract AT(30-1)-1480: A meeting was held with NYU's Vice-President and Treasurer and members of his staff to discuss NYOO's draft of the contract modification for the IBM-704 Computer. Agreement was reached on substantially all points. NYU is to submit an estimate of costs which is to include: rental of the IBM-704 for five years, amortization of the building and modifications for ten years, alterations of four floors required for AEC use, computer operating costs for five years, interest of the cost of the land for five years, and credits for rental income for five years. NYU also is to submit preliminary proposals for alterations of the four floors required by the AEC and for initial modification of the building. NYOO is to help NYU obtain a better delivery date for the computer.

Nuclear Development Corporation of America-Chugach Electric Association: The Deputy Manager attended the first negotiation meeting as an observer at the Schenectady Operations Office. A copy of the preliminary contract draft by Schenectady was sent to NYOO.

Nuclear Metals, Inc., Contract AT(30-1)-1565: Negotiations for sale of the laboratory equipment at the Hood Building and lease of this building continued. A detailed, final draft of the proposed modification was sent to Nuclear for its consideration.

Pennsylvania State University, Proposed Contract AT(30-1)-1859: The University was requested to reconsider its objection to the reports provision of this contract for the no-charge loan of fuel for their reactor. The NYOO Director of Finance was requested to estimate use charges for this material should AEC and the University continue the stalemate over this provision. Contact with Washington indicates there is little likelihood that the University's request for more favorable treatment will be approved.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238: A small fire at Project Matterhorn interrupted operations for a short time, and one unit was out of commission for a week.

A revised draft modification was submitted to Princeton covering guaranteed amortization for the expansion of the general facilities at the Forrestal Research Center. One negotiation meeting was held, negotiations continue.

Radio Corporation of America, Contract AT(30-1)-1958: Negotiations were completed for a definitive contract for development of a high speed electron accelerator structure for photomultiplier tubes.

Sylvania Electric Products, Co., Contract AT(30-1)GEN-366: The General Manager of Sylvania's Atomic Energy Division visited the Manager to discuss Sylvania's request for a hold-harmless article in the contract to cover both in-plant hazards and subsequent accidents involving products of the AEC research and development program. They are to submit a formal request for AEC consideration. The final overhead rate for calendar year 1955 was negotiated and negotiations are proceeding for a revised provisional rate for calendar year 1956. Sylvania also came in for preliminary discussion on treatment of clean-up and repair costs resulting from the thorium explosion in July.

Yale Linear Accelerator, Contract AT(30-1)-1691: Yale's revised budget providing for increased AEC participation in the project costs was submitted to Washington Research with a request for funds.

Vitro Corporation, Contract AT(30-1)-1782: Negotiations are underway to reduce the fee for the work under this contract during FY 1956 following a change in pace request from Reactor Development. The work involved in revising the Reactor Handbook remains the same, but is now stretched out into FY 1957.

Manager's Office

September 11, R. L. Corsbie, Chief, Civil Defense Liaison Branch, Division of Biology and Medicine, and Dr. A. W. Bellamy and Dean H. L. Bowman, Consultants to Biology and Medicine met with the Manager and other representatives of NYOO to review civil defense measures.

September 18, Dr. Kovan, Beryllium Corporation, for general discussion of beryllium poisoning.

September 24, Walter E. Kingston and Garth Edwards, Sylvania Electric Products, Inc., met with the Manager and Deputy Manager to discuss contract indemnity provisions.

September 26, Captain Mandelhorn, NRDL to discuss HASL-NRDL cooperation.

Personnel

Contractor Personnel

Agreement was reached among representatives of Vitro Corp. of America, Washington Organization and Personnel, and NYOO concerning revisions to the personnel policy appendix which applies to all Vitro cost contracts with AEC.

The Personnel policies of Dumont were reviewed with contractor representatives and agreement was reached concerning items which are to be reimbursed under the contract.

Federal Personnel Statistics

During the month the following personnel activities took place:

- 54 interviews with prospective candidates
- 32 screening, preliminary or courtesy interviews
- 22 interviews with candidates and operating officials
- 5 selections of outside candidates
- 5 temporary employees selected for permanent positions
- 7 other permanent appointments made
- 12 job evaluations completed
- 1 suggestion award of \$60 granted
- 2 superior accomplishment awards of \$300 each given

Miscellaneous

This office participated in wage, salary and fringe benefit surveys conducted by Nuclear Metals, Inc. and Columbia University.

During the strike of the Chauffeurs and Teamsters Union in the New York City area arrangements were made with local #478 to furnish drivers to transport argon gas from Linde Air Products, N.J. to Sylvania Electric Products, Bayside, N.Y.

Public Information

During the report period, 64 films from the Information Service's Film Library were shown to approximately 2816 people.

Security

During the report period, 183 clearances for access to secret data and 147 for access to confidential data were granted to Access Permittees by the Security Division. Requests for 80 secret and 71 confidential clearances were received for processing in the same period.

Technical Liaison

During the month of September 15 new access permits were assigned to NYOO. Of these new permits, 5 are for access to Secret Restricted Data. An additional 2 amendments to Secret brings the total number of Secret access permits up to 163. The total number of access permits assigned to NYOO is 342.

HEALTH AND SAFETY LABORATORY

Nuclear Safety Review Board

Feasibility Reports Approved

General Feasibility Report for the Fabrication of S3G Type Elements for the Knolls Atomic Power Laboratory (NMI-OLW-1) - Supplement No. 2 and 3

Norton Company Report of Feasibility for Manufacture of Exponential Elements for Argonne National Laboratory.

Fuel Element Dissolving Study - NDA

NMI-PDC-14 (Revised) Supplement No. 1

NMI-HFS-8 (Revised) Supplement No. 1

Field Studies

Anaconda Copper

Subsequent to a conference with Mr. J. H. Bayner of the Anaconda Copper Company and a request by Savannah River Operations, visits were made to the American Brass Company in Waterbury, Connecticut, an Anaconda subsidiary, and to the Heppenstall Company in Bridgeport to define for them the potential problems which might be involved in the heating, forging, and extruding of uranium tubing. The companies had been given conflicting information on the possible toxicity of these materials, and as a result were very confused. Copies of reports on studies carried out by the HASL on similar operations were lent to the American Brass Company and discussed during the conferences. As a result, the extrusions operations which were in question were carried out on a pilot scale. HASL personnel were present and obtained air samples during the operations. American Brass has been informed by letter that no hazard existed.

Bell Laboratory Infra-Red Spectrometer Survey

At the request of the Technical Liaison Division, the Radiation Branch conducted a survey of the above spectrometer to determine whether it had become contaminated during its use for the analysis of uranium.

Beryllium Corporation

Following a request by the Beryllium Corporation received through the Lockland Area Office, conferences have been held with the engineers designing the Beryllium Corporation's unit price beryllium metal plant to be built at Hazelton, Pennsylvania. Discussions have been held with the Beryllium Corporation engineers, and with the engineers of the Lummus Corporation who are designing the plant. During these conferences the flow pattern of the projected process was gone over in detail, and suggestions were made on the choice of process equipment, ventilation equipment, and air cleaning devices. It is expected that such a conference will be scheduled at least twice each month during the preliminary design phases.

Bridgeport Brass Company

At the request of OROO, the survey instrument service to the Bridgeport Brass Company contract is being extended for an additional year.

Brush Beryllium, Cleveland

A report has been transmitted covering an occupational dust study which was made in the Brush Beryllium Company plant in Cleveland. The report indicates a significant increase in the number of people who are exposed to concentrations of airborne beryllium material in excess of permissible amounts. Recommendations to improve these exposure conditions have been transmitted with the report.

Federal Civil Defense Administration

At the request of Region I Headquarters of the Federal Civil Defense Administration, a member of HASL visited the Headquarters during Operation Alert 1956. The purpose of this visit was to establish a liaison between the AEC and the FCDA and to learn at first hand those areas in which the Laboratory could provide useful assistance to the FCDA.

Food and Drug Administration

At the request of the Food and Drug Administration, the Radiation Branch has agreed to extend its Sensitive Materials activities to cooperate with them in the following up of violations of Federal regulations relating to the importation of fraudulent radioactive therapeutic devices.

Cooperation with Foreign Agencies

The Radiation Branch continued to supply film badges and report the indicated exposures to Dr. M. Nakaidzumi of the University of Tokyo. Film badges were also supplied to the University of Sciences of Bangkok, Thailand at their request.

Metals and Controls

At the request of the Schenectady Operations Office a visit was made to the Metals and Controls plant in Attleboro, Mass. The plant facilities were inspected and there was a general discussion with management concerning various areas of health and safety, especially items such as criticality control and disposal of liquid and solid wastes. As a follow-up on these discussions, a memo was transmitted to SOO outlining the basic procedures which should be followed by the plant in adhering to the Health and Safety standards published in Handbook #52.

Mallinckrodt Chemical Works

A report has been transmitted covering occupational exposures to uranium and fluoride materials in the metal plant of Mallinckrodt Chemical Works in St. Louis. With the exception of 4 operators, exposures of all the 105 employees of this plant were found to be acceptable. Recommendations have been submitted to the St. Louis area office for the improvement of the conditions.

Nuclear Development Corporation of America

A visit was made to the White Plains and Pawling facilities of NDA. The White Plains laboratory, which contains substantially all of the "cold" operations, appears to be functioning smoothly without any significant hazard. Here the primary problem appeared to arise from the possible rupture of a sodium loop. The various loops, however, appear to be under reasonably good control. Only one portion of the Pawling site, the hot cell, was in use. The other, the critical facility, is still in the final stages of construction. Inasmuch as the level of operation in the hot cell facility was very low at the time of the visit, it was not possible to make any definitive comment on the operations. A few minor recommendations were made to the company covering the general location and layout of the buildings.

Nuclear Metals, Incorporated

An inspection of the Hood Building facilities was made on July 27. As a result of this inspection it was concluded that continued occupancy of the Hood Building for Commission sponsored activities at the current level was inconsistent with Commission safety policies. It was therefore recommended that the work being accomplished at that site be relocated to whatever practical.

Because of overcrowding, NMI had already begun negotiations to remove a portion of their operations to 24 Lansdown Street. As a result of the HASL recommendations, however, it was decided to suspend these negotiations and to look for space which could accommodate a very significant portion of the Nuclear Metals Operations.

Nuclear Metals, Incorporated (Continued)

Such space was in fact located in a government-owned building about two blocks from the Hood Building which is at present being used by certain Air Force contracts. Negotiations have been completed to remove approximately 50% of the operations located in the Hood Building to the new space as quickly as possible.

A report has been transmitted covering a study of uranium dust exposures in the Hood Building. All of the employees were found to be exposed to less than 2% of permissible uranium dust concentrations in the air.

Project Matterhorn

A visit was made to the Forrestal Research Center, Princeton, New Jersey to investigate fire and safety protection in the Project Matterhorn Laboratory. A report has been submitted transmitting a large number of recommendations, primarily for protection against potential fire. There were also a few recommendations regarding installation of safety equipment.

Project Redwing

All personnel have returned from field operations. The computation and evaluation of the Redwing Program data continues and is now being correlated to include the attenuation information computed at the NYU Univac for variation of attenuation with collimator angle and altitude. All existing data on measurements made by HASL in aerial surveys have been brought together and are being compared. There are indications that some field measurements are still in order but final requirements cannot be stated until all data has been worked through.

Radiation Surveys

A survey team from HASL conducted a radiation survey at the University of Virginia Van De Graaff Generator on 9/11 through 9/13 and several accelerators at the University of Chicago including the Synchrocyclotron on 9/24 through 28.

State Agencies

Arrangements have been made to calibrate survey instruments for the New York State Department of Health in its recently implemented program of inspections of radiation installations.

Sylvania Electric, Bayside

As a result of the explosion which took place at the Sylvania Laboratory at Bayside in July, several actions have been taken to prevent such occurrences in the future. The HASL has provided assistance in the design and construction of a ventilation hood to be located outside of the building and to be used for the burning of pyrophoric materials. This hood has been built and will shortly be ready for operation. The hood includes a shielded front opening to protect the operator, an explosion vented top and rear to relieve the pressure of a possible explosion within the hood, and a filter exhaust system to remove from the air particulate material generated by the burning.

Sylvania Electric, Bayside (Continued)

In addition to building the hood, it has been necessary to dispose of the thorium fine material which was residual after the explosion. It was the intention of Sylvania to pack this material and ship it to sea for disposal. Because of the unnecessary cost and especially because of the potential inherent danger in repackaging the material, it was suggested that the drummed material be buried on the site.

Sylvania Electric, Hicksville

A report has been transmitted covering the occupational exposure to uranium dust of employees involved in the machining and grinding of uranium slugs at the Hicksville Pilot Plant. One of the operators was found to have higher exposure than considered advisable. However, the operation was discontinued shortly after the survey. Recommendations were made in the report which should be followed in the event the operation is resumed.

Projects

Calculations of Dose Rate Measured from Aircraft

Arrangements were made with NYU for the use of the Univac to calculate radiation attenuation for airborne measurements based upon equations developed by the Radiation Branch.

Federal Civil Defense Administration

The equations for air attenuation of gamma radiation at various altitudes with various cones of collimation have been run through the NYU Univac computer. With the data from this study, it is apparent that within the system reliability, at altitudes plus or minus 100 ft. about a selected median level, aerial surveys are practical without the use of a radio altimeter to correct altitude.

The multiplier phototube readout circuits are being redesigned to eliminate the altitude correction.

Image Minifier Scanning Tube for Gamma Ray Radiography

Work on the Image Minifier Scanning Tube for Gamma Ray Radiography is proceeding at the A.B. DuMont Laboratories. During August the initial investigation specifically centered on the possibility of using a rectangular face plate for the photosensitive surface, but has since been tested and found unsatisfactory. The contractor has been instructed to start design of a circular geometry tube. It is expected that an operable model will be available during October.

Image Minifier Scanning Tube for Gamma Ray Radiography (Continued)

The Chief of the Instruments Branch visited the Raytheon Manufacturing Company, Waltham, Massachusetts, to discuss image storage mechanism. It became evident that it would be feasible to store one or more images for several hours and reproduce them with full fidelity. This would be of major utility for fluoroscopic applications of gamma radiography.

Mercury Vapor Detector

During August the only sample mercury vapor glow tube was damaged and new tubes were not available until the second week of September. The power supply problems have been solved and a new high efficiency blower motor has been tested so that the total current drain of the system is less than 100 ma at 1 1/2 volts. This will obviate the need for storage batteries, AC power connections, or any other bulky power sources.

New mercury vapor lamps have been received and tested. The new design has a 1/2" arc length compared to the 1" arc length of the original version and provides sufficient UV light so that with a 365 millimicrons pass band filter and with no mercury vapor in the absorption column, the signal from the multiplier phototube (931A) is from 4 to 8 volts. This is completely sufficient to the needs of the problem. Additional light filters have been ordered, but have not been received so that testing of the light balancing circuit has been deferred.

Punch Card Data Reduction

Design work continues on components and sections of the system to be used with the IBM punch card machine. Equipment racks have been assembled for the fallout equipment, the main power supply and data conversion racks, the auxiliary test racks and the wireways. Progress has been made in the following areas:

1. The storage glow module designs have been completed, sufficient modules for immediate needs (300) have been fabricated and tested and have been put into stock pending installation.
2. The mechanical design for beta tape counting units has been completed and all models will be brought to this stage of design within the next few weeks.
3. The radon system has been redesigned, the mechanical structure changes completed on one unit, and all other units will be changed over in the near future.
4. A large proportion of the control mechanisms, the relay selections, the structure philosophy of mounting and other pertinent decisions have been made.
5. Dial sample changing mechanisms for the Mercury Vapor Detector at Weldon Spring, Missouri.

The system is progressing smoothly with indications that we will meet completion schedules set for approximately the first of next year.

Scrap Disposal

AEC Manual Chapter 5182, specifying permissible disposal of scrap materials has been revised to reflect the results of work which was performed by the HASL. This work, which was completed earlier this year, showed that negligible amounts of uranium would remain in several non-ferrous metals after resmelting. Chapter 5182, which had previously been limited to ferrous metals, was therefore revised to include stainless steel, copper and nickel.

Sensitive Materials

Following is a list of the subject areas in which HASL participated under its agreement to assist other Government agencies:

Torbenite from British Museum	8/9/56
Thorium Phosphate from England	9/11
Rock Samples from Texas	9/11
Uranium Ore Sample from Salt Lake City	9/11
Torbenite Sample from Spain	9/11
Uraninite Sample from Canada	9/11
Monazite Sand Sample from Brazil	9/11
Thorium Mineral Samples from Brazil	9/11
Small Ore Sample from Portugal	9/11
Columbium Ore Shipment from Brazil	9/12
200 millicuries Mesothorium, Laboratory Source	9/12
Radioactive Ore from Chile	9/13

Waste Disposal Program

On July 15, representatives of the Administrative Operations Division and the Chief, Radiation Branch visited the Naval Ammunition Depot, Earle, New Jersey to resolve problems arising with the increased quantity of wastes now being disposed of in this manner. It was agreed to arrange for a training course for Navy personnel from both the depot and the Steamship SS Calhoun County in order to avoid repetition of contamination incidents which have occurred, and although these have not been serious, they are a source of some friction between the AEC and the Navy. It appears that inexperience on the part of Navy personnel is largely responsible for the trouble. Brookhaven National Laboratory has agreed to conduct this training course.

Because the capacity of the SS Calhoun County has now been exceeded, AEC Washington has been asked to make a formal request to the U.S. Navy for additional shipping facilities.

X-Ray Generator

The installation of the 250 KV generator in the Radiation Branch has been completed together with the structural shielding. Additional local shielding around the tubehead is necessary before the generator can be placed in full-scale operation.

Laboratory Work

Fallout

9,490 samples were processed during August and September.

Pot Samples

The Analytical Branch set up a program of collection of pot samples by (1) The University of Hawaii, (2) USPHS in Salt Lake City, and (3) University of California in West Los Angeles.

Sample Analyses

The Analytical Branch analyzed 1491 samples of the following:

Uranium - Air Dust 512, Urinary, 349, Misc. 336
Beryllium - Air Dust 222, Urinary 12, Misc. 19
Thorium - Urine and tissue 32
Fluoride - 9

Instruments

Films Processed - 3002
Instruments Calibrated - 52
Instruments Repaired - 36
Instruments checked for contamination - 40
Instruments decontaminated - 1

Miscellaneous Personnel Activities

Publications

An analytical study of film badge characteristics was completed and a report entitled "A System of Film Badge Interpretation" was prepared and has been accepted by Nucleonics for publication.

A Literature Search report, NYO-4712, on the subject of "Background Radiation" by Wayne M. Lowder and Leonard R. Solon was completed and distributed.

A report entitled "An Ionization Chamber Method of Measuring Gamma Radiation Dose Rates and Neutron Fluxes in Mixed Fields of Known Energy," by Karen O'Brien and Jim McLaughlin, Jr. was completed and accepted by Nucleonics for publication.

Report NYO-4751 entitled "Summary of Analytical Results from the HASL Strontium Program to June 1956" was prepared and 160 copies were submitted to Norman Armour of the U.S. Mission for transmission to the UN Committee on the Effects of Atomic Radiation.

A complete set (9 volumes) of Fallout Summaries were prepared for transmission to the UN Committee on the Effects of Atomic Radiation.

"Radioactive Fallout Through September 1955" by Merrill Eisenbud and John Harley was published in Science on 8/10.

Visits by HASL

The Director, HASL, and Chief, Radiation Branch visited Dr. G. Failla at his home to discuss a special Sunshine Report.

The Chief, Radiation Branch attended his first meeting as Scientific Secretary of the Advisory Committee, Division of Biology and Medicine, Washington. The Director of the Laboratory also attended.

HASL was represented at the AEC Radiation Protection Panel Meeting as well as the Biology and Medicine Program Directors Meeting in Idaho Falls, September 26 through 28, by the Radiation Branch Chief.

Naomi Hallden met with Al Berk of Simon Adhesive Company on 9/26 to discuss the cause of the discrepancy with respect to tensile strength between their results and those of HASL on the latest shipment of gummed film for the fallout network.

Visits to HASL

Dr. H. Pychlay, Freiberg, West Germany, visited the Radiation Branch to discuss the use of survey meters manufactured by his company.

Dr. Hideo Ierie, Professor of Radiology at Kyushu University, Japan for tour of HASL.

John Hall, Director of International Affairs, Washington AEC to view HASL.

Dr. Graul, Editor of Atompraxis, Germany.

Mr. Ray Zintz of Biology and Medicine visited HASL and Brookhaven to discuss the formulation of AEC Radiation Safety Standards.

Mr. Al Rihm of the New York State Department of Health visited to discuss AEC cooperation in the calibration of instruments for the State inspectors.

Miss B.L. Jones of the American Education Labor Service visited to discuss a Labor Education Program in radiation protection with Director, Public Information Service and Chief, Radiation Branch.

Dr. Bo Lindell of the Institute of Radiophysics, Stockholm, Sweden visited to discuss background measurements.

Dr. Carl H. Roberts, Director, Health Physics for the Curtiss-Wright Corporation visited to discuss a program for the new Curtiss-Wright Plant in Pennsylvania.

Colonel James B. Hartgering of the Walter Reed Army Institute of Research visited Dr. Harley to discuss Marshallese urine samples and future cooperation between his laboratory and HASL.

Visits to HASL (Continued)

Dr. I.R. Tabershaw of the New York Department of Labor visited Dr. Harley and brought samples for uranium and thorium analysis.

Dr. Dayton E. Carritt, Johns Hopkins University at Annapolis, Maryland, visited Dr. Harley to complete report of the NAS-NCR Committee on the Development of Atomic Energy in Relation to Oceanography and Fisheries.

Drs. Alexander and Peterson, U.S. Department of Agriculture, Beltsville, Maryland, discussed the strontium program with Dr. Harley, Ira Whitney and Ed Hardy.

Dr. Salva Nassar, Associate Professor of Physics at the American University of Beirut (Lebanon) visited Dr. Harley and discussed monitoring procedures and analytical procedures required for health protection.

Howard Boroughs of the University of Hawaii Marine Laboratory visited Dr. Harley to discuss analytical procedures for their current AEC contract.

Frank Smallwood, Administrative Assistant to A. Tammaro, visited NYOO and was taken on an inspection of the laboratory.

Dr. Matsuaki Shimagawa was taken on an inspection of the laboratory.

Dr. E. Tajima, Secretary to the U.N. Committee on Radiation visited the laboratory and discussed fallout procedures and results.

Dr. Lloyd Zumwalt of Nuclear Science and Engineering Corporation, Pittsburgh, Pennsylvania, visited Dr. Harley to discuss uranium and thorium analyses.

Dr. Carl Roberts of Curtiss-Wright visited Dr. Harley to discuss beryllium processes and site survey measurements.

Dr. Stan Cohen of the Naval Radiological Laboratory, San Francisco visited Ira Whitney to discuss uranium fluorimetric analyses.

The Japanese Atomic Energy Policy Study Team was taken on a tour of the laboratory.

Messrs. E.W. Caille and R. Corph of the Westinghouse Corporation visited William Harris for advice in setting up a millicurie quantity isotope laboratory in the Bloomfield Lamp Division Plant in New Jersey.

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SECTION II

BROOKHAVEN NATIONAL LABORATORY
MONTHLY STATUS AND PROGRESS REPORT
FOR SEPTEMBER 1956

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

A. Buildings

Construction of the Service Building is approximately 95% complete. It is planned that, consistent with completion of the Service Building, all machine tools will be installed by October 15, and all personnel will be moved into new quarters by November 15. Final design of the Linear Accelerator and Target Buildings was approximately 95% complete at month's end. It is anticipated that Invitations to Bid for the super-structures of these two buildings will be issued on October 22, with bid opening to take place on November 27. Steel for the two buildings, which was previously procured from Belmont Iron Works, is scheduled for delivery at the site on December 15.

B. Machines

Magnet - The Allis-Chalmers fabrication model for the Magnet has been shipped to the site for test. Westinghouse Electric Company model is under construction and is promised for shipment to Brookhaven in November. Discussion with steel suppliers has continued and an attempt is being made to firm up the Magnet steel specification by November 1.

Power Supply - Bids for the power supply have been solicited and are to be received by October 15.

Linac - Progress reports from Eimac indicate that no substantial work has been performed on the Klystrons to date. It is understood that the Cockroft Walton machine being supplied by Phillips is under construction. The mechanical model for the Linac has been received and will be moved into the Service Building on or about November 1 for testing. Drift tube models have been received and tested and found to be satisfactory as has the electrical model for the Linac tank. As a result of the last two items, specifications and final design are under way.

RF System - Ferrite cavities have been received and have been assembled. They will be placed under test in the new Service Building when that building is available. Detail design for prototype cavities has been approved.

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Vacuum System - A definite decision has been reached to use Evaporion pumps. Mechanical tests are continuing on the vacuum chamber. Currently it is anticipated that the vacuum chamber will be an Inconel tube with exterior fins to provide mechanical support against collapse.

Target Shielding - Magnetite shielding blocks have been received for the Target Building and will undergo test in the near future to allow firming up of specifications for bidding.

Medical Research Center

At month's end, heavy building excavation was virtually complete except for the Reactor Building. Pouring of foundation concrete and installation of underground electrical work has placed the Medical Center at an estimated 4% complete.

During the month, the contract with the Daystrom Company for the Medical reactor was executed by the New York Office with certain conditions which are being resolved with the Daystrom Company. The shutters for the Reactor have been fabricated and poured (by Baldwin-Lima-Hamilton) and will be ready for test in the near future.

Engineering Works Area

Overall progress on the preliminary construction work on this project is approximately 4%.

Cosmotron

During the regular maintenance shutdown of the Cosmotron, an inspection of the pole face winding connections has revealed several points at which arcing has taken place. The particular faults have been corrected but the general condition still exists and may prove troublesome in the future.

It has been found that when the deflecting magnet for the external proton beam is in place inside the straight section, the intensity of the circulating beam is reduced by a factor of two. The cause of this has not yet been definitely determined but from tests performed near the end of the past running period it is believed that the loss is due to distortion of the Cosmotron's magnetic field by the presence of the iron in this deflecting magnet. Further studies will be made to find means to correct the cause of this loss in beam intensity.

The principal run during this report period was one using the external proton beam directed against a target near the Columbia Cloud Chamber. The object of this run was to obtain more data on the production of the

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newly found neutron θ_2 meson. Both the MIT and Princeton multiplate cloud chambers were operated simultaneously during this run, receiving occasional pulses when needed. The past month also saw the first use of the BNL hydrogen bubble chamber. 4000 pictures were obtained of negative pions passing through the chamber. These will be examined for interactions resulting in the production of hyperons and heavy mesons.

A rather large propane bubble chamber, provided with solenoids to furnish a magnetic field, which was constructed at Columbia, has been installed on the floor of the Cosmotron and will be operated in the next running period starting about October 1.

The new hydrogen liquefier is being readied for initial operation. Two engineers from the Boulder, Colorado branch of the Bureau of Standards are here to assist in getting this equipment into operation.

60" Cyclotron

During the month, the Cyclotron was opened to replace water cooling lines which had shown evidence of erosion. It was found that two short circuits showed a considerable loss of copper (greater than 50%) while one longer circuit in parallel service showed only about 5% loss of copper. This confirms the suggestion of the Metallurgy Department that the cause is velocity erosion. An effort is now being made to reduce the flow in all water cooling circuits as much as is consistent with adequate cooling.

Reactor Safety Study

At the request of the Division of Reactor Development, Brookhaven National Laboratory has undertaken a "Reactor Safety Study Project" to be completed by January 1, 1957. The project will concern itself with the environmental aspects of a conceivable major accident of commercial power reactors up to 1000 megawatts thermal power. The adequacy and accuracy of present knowledge will be explored and recommendations will be made for further study leading to more accurate understandings. A report will be furnished for use by the Joint Committee for Atomic Energy.

Financial Information

A review of the total operating costs for BNL for the first two months of FY 1957 determined that the level was 97.3% of the estimated costs for the period. During this time, the Laboratory operated under a tentative financial plan in amounts less than those requested and operations will continue on this basis until a definitive approved financial plan is received. Costs of equipment not related to construc-

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tion were found to be 96.3% of the estimated amounts. In the absence of an approved financial plan, no new construction is being undertaken. Construction projects obligated in prior years are going forward but Brookhaven is in need of funds for General Plant Projects.

Research Reports

During September, 33 papers were approved for publication. This number included 21 on physical sciences, 6 on life sciences, and 6 on applied and general subjects.

Visitors

The Laboratory was visited by the following, among others:

60 foreign students participating in the MIT Foreign Student Summer Project, on September 5.

37 Scientists participating in a conference on Dynamics of Proliferating Tissues, sponsored by the Biology Council of the National Academy of Sciences and the National Research Council, September 5 - 8.

9 insurance underwriters, interested in special hazards for personnel working in atomic energy establishments on September 11.

34 members of the French Parliament, on September 12.

7 Deans from universities of Colombia, South America, on September 13.

Henri Paul Jammet, a French member of the United Nations Delegation to discuss fallout effects of radiation on September 13.

5 representatives of the United Nations Public Relations Department, one Chinese, one Egyptian, one New Zealander, and two U. S. citizens, to get background information on the Laboratory and view the general facilities, on September 14.

4 engineers from the French AEC, on September 14.

14 members of the Japanese Diet and industrialists, on September 20.

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43 scientists, including 3 Canadians, a Britisher and a Belgian, participating in a conference on Resonance Absorption of Neutrons in Nuclear Reactors, on September 24 and 25.

4 Japanese industrial representatives, on September 25.

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

OCTOBER 1956

SECTION I - NEW YORK OFFICE

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Office Management

A breakdown of telephone and teletype traffic in August, September and October shows a normal increase from the vacation period to the months of heavier workload throughout the NYOO.

	<u>August</u>	<u>September</u>	<u>October</u>
Local Calls	8,300 cost \$377.26	8,852 cost \$402.10	8,901 cost \$404.30
Long Distance	612 cost \$960.35	578 cost \$952.20	650 cost \$1003.90
Teletypes	790	669	858

Procurement & Traffic

An exhibit of items purchased by NYOO and suitable for supply by small business firms was assembled by members of the Procurement Branch for showing at Procurement Conferences held in Trenton, N. J. and Waterbury, Conn. The exhibits were sponsored by the Small Business Administration and were viewed by more than 500 potential suppliers.

Property

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for shipments of contaminated waste for the quarterly period ending October 31, 1956, for the following installations:

Chicago Operations Office

Pittsburgh Area Office (Westinghouse Atomic Power Division)
for the disposal of 393.1765 tons

Hartford Area Office (Pratt & Whitney Aircraft Corp.)
for the disposal of 6.2015 tons

New York Operations Office

Sylvania Electric Products, Inc. - Contract AT(30-1)-366
for the disposal of 4.65 tons

*Brookhaven's wastes were picked up by Dept. of Navy at Floyd Bennett Field, Brooklyn, N.Y. for disposal at sea.

During the quarterly reporting period, arrangements were completed for the acquisition of approximately \$93,500 worth of excess property for approximately \$10,500. This represents about 12% of acquisition cost. There were 100 trips made by 5 vehicles during the quarter for a total of 11,547 miles travelled.

There were 2197.043 troy ounces of contaminated and uncontaminated platinum received for processing during the quarter worth approximately \$219,704. Shipped out were 821.181 troy ounces of pure platinum for a total value of approximately \$82,118.

The following visited this office regarding property matters:

D. Lundy - Bishop & Company, P. Williams, J. Cooney and R. Volterra - Metals Control Corp., R. Mortenson - University of Rochester (Cyclotron Project) and Byron Roscoe - Purchasing Agent - Harvard University

Records Management

Revised listing, reflecting approved categories for NYOO contractors to receive classified reports on automatic distribution, was completed and forwarded to TISE, Oak Ridge, for inclusion in the 19th Edition of the Standard Distribution Tests.

A visit was made to Nuclear Metals, Inc., to assist the contractor's Record's Manager in establishing a sound records management program.

Report NYO-4753 "Annotated Bibliography on Fall-Out Resulting From Nuclear Explosions", containing 175 references was sent to TISE, Oak Ridge, for distribution.

Contracts

General Electric, Proposed Contract AT(30-1)-1963:

Negotiations continued and were centered upon background patent rights. General Electric has proposed that it license other suppliers to use its background patents and know-how, for the manufacture of the capacitors to be developed under this contract. NYOO is considering this proposal as well as General Electric's position concerning ownership of technical data and know-how developed by reason of the contract.

Harvard University, Cambridge Electron Accelerator; Contract AT(30-1)-1909:

Authority was given to the Harvard group to proceed with detailed design of the laboratory-control building. Bids for groundbreaking and a sewer relocation ranged from about \$31,000 to \$74,000 and were submitted to NYOO for approval. Purchase of the first major subcomponent, an RF generator, has been approved by NYOO.

A complete draft of a definitive contract was sent to Harvard on October 17th as a basis for final negotiations. Harvard's proposal for overhead continues to receive attention because they have requested a rate different from the established rate, and because the applicability of their normal overhead structure to this project is not yet established.

New York University, Computing Center, Contract AT(30-1)-1480:

Negotiations proceeded for modification of this contract to provide for the University's purchase of the building to house the IBM-704 computer. The University's revised preliminary proposal for alteration of the building and operation of the computer was received and is being sent to Headquarters for approval. The delivery date expected for the computer is March 15, 1957. The University has possession of the building and is now arranging for building alterations. A modification is being negotiated to extend the term of the contract for UNIVAC operation for three years with funding on an annual basis.

Nuclear Development Corporation of America-Chugach Electric Association:

The Assistant General Counsel was represented by NYOO at the Schenectady Operations Office's negotiation meeting on October 10th, and the Contracts Division participated in a subsequent NYOO review of the draft contract terms. NYOO Counsel is to draft and consolidate comments for SOO consideration.

Nuclear Development Corporation, Contract AT(30-1)-862:

The final firm overhead for the period April 1, 1955 to September 30, 1955 was negotiated. The contractor's overhead structure has been revised to provide three separate overhead rates; a charge for personnel benefits and costs, a charge for technical services, and a charge for administrative and general costs.

Nuclear Metals, Inc., Contract AT(30-1)-1565:

Nuclear submitted its comments on the NYOO definitive draft of a contract modification to accomplish the sale of AEC equipment and lease of the Hood Building. They requested that this contract modification include a hold-harmless provision to protect them against liabilities arising out of accidents during the course of or involving items produced under their AEC work program. Counsel is preparing to submit this to Headquarters. Nuclear has begun to prepare space in a nearby government-owned building for hazardous work that is to be transferred from the Hood Building.

Pennsylvania State University, Proposed Contract AT(30-1)-1859:

The University has not yet agreed to the terms of the contract for the loan of fuel for the Penn State reactor. They have acknowledged NYOO's request that they reconsider their previous objections to the Patents and Reports provisions and state that their counsel now has the problem under review.

Princeton University, Accelerator Project, Contract AT(30-1)-1916:

Princeton has agreed to a system of cost control based upon the directive system and conforming with the requirements of the Staff Paper by which the selection of their proposal was approved. University representatives met with NYOO on October 2nd to discuss general contract terms, and on the nineteenth, submitted a proposal for title and right of use for the facilities

to be provided. They proposed to take title to the administration building (as presently conceived this is a two story building devoted to offices, stores, shop and some small laboratory space). As for the accelerator, and associated buildings and equipment, these would belong to the AEC subject to the following conditions which are now under consideration:

- (1) the University may use the facilities for AEC contracts or for other purposes approved by the AEC.
- (2) if no operating contract is consummated, the University shall have the right to use the facilities unless the Commission decides that the use is not in the best interests of the country. In that event, the University would retain the right to at least half of the regular operating time and the Commission could use the facilities during the remaining time.
- (3) the land would be leased to the Commission for 25 years.
- (4) the University would have an option to buy the facilities at cost less depreciation, or at the value at time of purchase.
- (5) Title would vest in the University after 25 years.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238:

NYOO is reviewing the University's formal report on the fire which took place in September to determine the extent of damage to AEC property and possible claims for reimbursement. Negotiations concerning expansion of the Matterhorn facilities, NYOO is awaiting Princeton's position on the extent to which the University will be responsible for supplying general facilities that may be needed before proceeding with negotiation on the expansion of Matterhorn.

Sylvania Electric Products, Inc., Contract AT(30-1)-GEN-366:

Sylvania has requested a general hold-harmless provision from the AEC to safeguard them against liabilities arising out of accidents in their plant or involving items produced under this contract. NYOO is preparing the submission of this to Headquarters. Sylvania has also requested to be held harmless for liabilities arising out of any accident that might occur during their disposal of some thorium scrap. This material is the same as that involved in the July explosion at Sylvania. Sylvania has requested authority to proceed with fabrication and installation of testing equipment for its Aircraft Reactor's work at an estimated cost of \$70,000. Since this cost estimate was substantially in excess of earlier ones, they were requested to submit a detailed specification and estimate.

Yale Linear Accelerator, Contract AT(30-1)-1691:

The Division of Research, Washington approved additional funds for increased AEC participation in the project costs. A contract modification is being prepared to change the scope of work and to reflect this increase.

Vitro Corporation, Contract AT(30-1)-1782:

Negotiations were concluded for reduction of the FY 1956 fee and to establish the fee for the FY 1957 work on revision of the AEC Reactor Handbook.

University of Rochester Cyclotron Project, Contract AT(30-1)-875:

NYOO authorized the University to proceed with detailed design of additional laboratory space.

Personnel

Contractor Personnel

A tuition refund policy was developed and accepted as a reimbursable item under the contract with Nuclear Development Corporation of America.

Final agreement was reached on items of personnel costs which will be reimbursed under the contract with Babcock and Wilcox.

Federal Personnel Statistics

During the month the following personnel activities took place:

- 85 interviews with prospective candidates
- 19 screening, preliminary or courtesy interviews
- 36 interviews with candidates and operating officials
- 9 selections of outside candidates
- 1 selection from another AEC office
- 7 appointments made
- 18 job evaluations completed

As a result of extensive publicity and circularization 326 applications for employment were received during the month.

Miscellaneous

A group award of \$300, and appropriate certificates of merit, were presented to 38 employees for outstanding performance in connection with the most recent Nuclear test series.

Public Information

During the first two weeks of October the Public Information Service served as liaison between the department of State and Brookhaven National Laboratory on arrangements for a tour of the Laboratory on Saturday, October 20 by Delegates to the International Atomic Energy Conference at the United Nations. Seventy-nine delegates, accompanied by 32 members of the foreign and domestic press corps were transported from UN headquarters to the Laboratory in buses provided by the NYOO. The guests were received by Merrill Eisenbud, NYOO Manager, and Dr. Lee J. Haworth, Laboratory director who sketched Laboratory history and programs for them. They were then taken on a tour of special exhibits after lunch visited the Cosmotron, the reactor and the hot chemistry facilities. An impromptu press conference with Dr. Lee Farr was held for reporters who indicated an interest in neutron capture therapy. After an informal tea the visitors departed for the UN.

On Saturday October 27, the one day Atomic Energy Institute for Junior High School science teachers, planning for which had begun in late Spring, was successfully concluded. The program was sponsored by the Board of Education with the cooperation of PIS NYOO and the Consolidated Edison Company, which provided the lecture hall and served lunch to the teachers and other guests.

The 238 teachers who attended represented better than 80% of the Junior High Schools in the city's five boroughs. The program included an opening lecture on the basic science of atomic energy by Mr. Elmer Galley one of the seven "traveling science teachers" trained at the Oak Ridge Institute of Nuclear Studies. Mr. Galley also gave the concluding lecture on how to teach atomic energy to science students. In addition the teachers heard discussions on the peacetime uses of atomic energy in biology, medicine, agriculture and industry as well as a review of the status of atomic power.

In addition to inquiries on varied aspects of atomic energy the New York Press Corps was particularly concerned during October with two subjects: One was the origin, distribution, potency and efforts of strontium 90. The other was the death of Dr. Kenneth Koerber, who was said, by the Philadelphia coroner, to have died of radiation poisoning acquired during a year's employment at Brookhaven National Laboratory. PIS answered inquiries from press in and around New York City and approved a statement for use by the Laboratory. Subsequent analysis of bone from the deceased has proved that statements by the Philadelphia physician were without basis in fact.

During the report period 92 films from the Information Service's Film Library were shown to approximately 4048 people.

Security

During the report period, 185 clearances for access to secret data and 72 for access to confidential data were granted to Access Permittees by the Security Division. Requests for 147 secret and 75 confidential clearances were received for processing in the same period.

Technical Liaison

During the month of October, 13 new access permits were assigned to NYOO. Of these new permits, 5 were for access to Secret Restricted Data. An additional 3 amendments to Secret brings the total number of Secret access permits up to 171. With cancellation of one Confidential access permit, the total number of access permits assigned to NYOO is 355.

HEALTH AND SAFETY LABORATORY

Nuclear Safety Review Board

Feasibility Report No. 6; Burnup Analysis on Irradiated Fuel Elements - Contract AT(30-1)-862

Feasibility Report No. 40 - Sponsored Task C-46
Sylvania Electric Products, Inc. Bayside

NMI-OLW-1 (Suppl. 4), NMI-OLW-1 (Suppl. 5)

Field Studies

American Brass Company

A report has been transmitted to Nuclear Metals, SROO, and the American Brass Company covering a visit which was made to the Waterbury plant of American Brass for the purpose of reviewing potential health hazards accompanying extrusion operations. The operations were part of a pilot study to evaluate the possibility of using extrusion as a procedure for forming hollow uranium tubes. Air samples which were taken indicate that the potential exposure from this type of operation is very low.

Beryllium Corporation of America

Conferences have been held with the Lummus Corporation (designing engineers) and the Beryllium Corporation regarding the design of the latter's new beryllium facility. In the course of the discussions, the types of equipment proposed for approximately the first half of the process have been discussed. Suggestions made to the designing engineer should result in a safer plant design.

Brookhaven National Laboratory

A report has been transmitted covering a fire protection survey which was made at BNL. As a result of the survey several specific and a few general recommendations were made about the safety and fire protection status of the Laboratory. These included personnel staffing requirements, as well as automatic alarm equipment in several of the areas. A few recommendations of a procedural nature were also included.

Long Island Biological Laboratory

A visit was made to the Cold Springs Harbor Laboratory of the Long Island Biological Laboratory for the purpose of reviewing the safety and fire protection at the Laboratory. No recommendations appeared to be needed at the time of the visit.

Mallinckrodt Chemical Works

A report has been transmitted covering a survey of the Plant 4 area of Mallinckrodt Chemical Works, made to define the occupational exposure of the 74 employees to airborne dust of various uranium compounds. Analyses were also performed to elucidate several fluoride exposures. The results of the survey indicate that concentrations of airborne uranium and fluoride dust to which personnel were exposed are within acceptable limits. Several recommendations of a procedural nature were presented with the report. These were made to facilitate general improvement.

A report was transmitted describing a survey of Plant 6 of Mallinckrodt Chemical Works. This survey evaluated the exposure of 434 employees to airborne uranium dust. Of the people who were studied 94% (408) employees had daily exposures below 100 d/m³. The remaining 26 men were exposed to more than this value. The largest single exposure resulted from a single intermittent kind of operation. The others came from other components of the work. Recommendations were presented with the report for an

improvement of the conditions leading to the high exposures.

Project Redwing

The Redwing data is being worked into final form. It is believed that a field program will be essential to measure the attenuation characteristics of collimated detectors using a simulated infinite plane source. A proposal will be written to cover this operation at some future date.

Projects

DTR System

The punch card data reduction system has now been designated as the DTR (Digital Transfer Reporter) and the components are coming into form. The glow storage modules are complete, have been tested and are found to be satisfactory. The background subtractor circuit has been designed and is now in test to determine tolerances of components to permit construction specifications. The circuit as it now operates will handle 2 pulses spaced 10 microseconds apart. An investigation has been started on the possibility of using printed circuit techniques, especially those utilizing the ceramic plaque fabrication where the manufacturer packages the entire unit.

The key punch operation circuit has been designed and tested. A mercury wetted relay will be used and is sufficiently fast to permit at least 18 operations per second.

The time date group module has been designed so that the years date and time record will be numerically sequenced by days, and the days divided into 15 minute intervals. A one day timer will sequence the day numbers and reset the 15 minute interval record to 00.

Fallout Counter Measures

A. J. Breslin Industrial Hygiene Branch and Len Solon Radiation Branch attended a conference on the Shielding Symposium which was held in San Francisco. A portion of the symposium was devoted to the various aspects of shielding radiations from nuclear explosions. Mr. Breslin presented a synopsis of the work done to the present time on the general subject of fallout countermeasures.

In connection with this work, a small pilot study was set up to determine the feasibility of using water to remove fallout materials from a simulated roof surface. Aluminum roofing material was used and successive tests were run on plain, corroded, and painted surfaces to determine the effectiveness of the washdown. The simulated roofing was also treated to simulate a graveled surface.

Water was applied to the roof by means of a simple spray nozzle and by dribbling from a hole in the header. Using the spray the water consumption was approximately 0.3 gallons/minute/foot of width. Crystalline limestone was sifted into the roof at a rate of about 1 gram/square foot to simulate fallout. The tests showed moderately high efficiency. It appears that with this kind of treatment the aluminum cleaned to the extent of about 97% to 99%, whereas the simulated gravel surface cleaned about 50%.

Image Intensifier Scanning Tube

Construction has been started on a 22" diameter tube embodying the final principles which will be used in the 30" tube. It is now indicated that the tube will be delivered about December 1.

Sensitive Materials

The following is a list of the subject areas in which HASL participated under its agreement to assist other government agencies.

Radium exported to Geneva, Switzerland	10/2
10 lbs. of assorted minerals from Berlin, Germany	10/4
Uranium ore samples of Spanish origin	10/15
Chemicals for analysis from India	10/18
Liquid level gauge from England	10/19
Tea shipment from Indonesia	10/19

Utilization and Disposal

In connection with the Laboratory's efforts toward revising AEC regulations to permit disposal of contaminated material, a draft copy of paragraph 5170-1411, permitting disposal of contaminated equipment, was reviewed. This paragraph would divide equipment into three groups according to contamination levels. One of these would be assumed to be uncontaminated; a second, disposable, but contaminated; and the third, disposable only within the Commission. Several major changes were suggested in the draft copy.

Laboratory Operations

Soil Survey

A soil survey of seventeen stations in the US, was made by HASL personnel during the period 10/8/56 to 10/15/56.

Fallout

10,883 fallout samples were processed during this period. March and April samples were composited in order to complete results for the first-half of the 1956 data.

Sample Analyses

The Analytical Branch analyzed 973 samples of the following:

Uranium - air dust, 381; urinary, 196; misc. 110
Beryllium - air dust, 177; misc. 39
Radium - urinary, 1; misc. 8
Radon - 2
Misc. - 59

Miscellaneous Personnel Activities

Publications

The report of the radiation survey at the University of Virginia Van De Graaff accelerator has been completed and distributed.

A report on film badge evaluation by K. O'Brian, H. Blatz, and L.R. Solon appeared in the October issue of *Nucleonics*.

An article entitled "Recent Observations on Dust Control in South African Mines" by W. B. Harris appeared in the October issue of *A.M.A. Archives of Industrial Health*.

Meetings

H. D. LeVine visited FCDA at Battle Creek, Michigan and reached agreement regarding the program to be undertaken for a radiation survey meter to be used for Civilian Defense. FCDA has agreed to finance this program and should provide authorization.

John Harley participated in Bio-assay meetings at Los Alamos, N.M. on 10/10 and also met with L.T. Alexander at the Soil Survey Center, Beltsville, Md. on 10/17 to discuss strontium soil studies.

John Harley, Ira Whitney, and Ed Hardy participated in the International Cooperation meeting in Washington D. C. on 10/8 re proposed US-UK-Canadian Conference on Radioactive Fallout.

John Harley attended International Geophysical Year meeting in Washington, D. C. on 10/20.

John Harley Participated in meeting with Merrill Eisenbud and Allen Laugh with respect to the strontium contract.

John Harley attended five afternoon sessions of the second UN Scientific Committee on the Effects of Atomic Radiation on 10/24, 25, 26, 29, 30 as an advisor.

A meeting was held between Hanson Blatz and G. K. Green, Director of the BNL accelerator group to discuss long range radiation protection aspects of the AGS accelerator design.

Hanson Blatz represented the AEC at a Labor Department hearing in Hamilton, Ohio to testify in connection with the defense against a claim for death benefits by a former employee of the National Lead Company of Ohio. The claim was based upon radiation induced cancer.

Hanson Blatz attended a meeting with Commissioner Hilleboe, NY State Dept of Health, Albany to discuss implementation of the first National Academy of Science recommendation on the maintenance of individual personal radiation exposure records, particularly by the medical profession. A trail run in a small upper NY State community has been agreed upon, although the community has not yet been selected.

Members of the Radiation Branch attended a meeting at the Francis Delafield Hospital on the subject of radiation protection legislation.

Mr. W. B. Harris attended a meeting with members of the Beryllium Advisory Committee held at NYOO on 10/31 to discuss revision of the AEC Recommendations for the Control of Beryllium Hazards.

Visits to HASL

Drs. Tajima and Bersson of the UN Scientific Committee toured HASL.
Dr. Toshio Hoki, Chief, Health Physics Group, Japanese Atomic Energy Research Institute toured HASL.
Drs. M. Tsuzuki, N. Saito, S. Ohita, and H. Ishida of the University of Tokyo toured HASL.
R. Miller of the Hunter College High School and 27 science students toured HASL.
R. Boulinger, Belgium toured HASL and received lecture on analytical methods and drawings for radon equipment.
Dr. A. C. Chamberlain and Dr. A. Morgan, AERE-Harwell on re Strontium program.
Dr. A. A. Smales and Dr. F. J. Bryant, AERE-Harwell on re Strontium program.
Dr. G. Barzongam, Iran re Fallout sampling.
Dr. E. Anderson, Los Alamos Scientific Laboratory re Exchange on analytical results on milk analyses.
Mr. James Poling, free-lance writer, re Strontium Program.
Dr. Ira Pullman, National Academy of Sciences re Strontium data.
Messrs. Veen and Abbate of the General Electric Company to discuss beryllium hazards.
Dr. Y. Hiyama, Fisheries Institute of the Tokyo U Faculty of Agriculture re Strontium program.

Visits

Mr. Harris gave a talk on reactor materials at the University of Rochester on 10/17.

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SECTION II

BROOKHAVEN NATIONAL LABORATORY
MONTHLY STATUS AND PROGRESS REPORT
FOR OCTOBER 1956

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

A. Buildings

All major construction of the Service Building has been completed and the building is being occupied. Work on the Magnet Tunnel is on schedule with all footings, 90% of the lower walls and 50% of the Tunnel Roof completed. The Linac Tunnel walls are 90% complete and 50% of the roof is complete. Excavation of north and south Target Building conjunction sections has been completed and footings for the north unit are being poured. Invitation for bid for the balance of the structural work was issued on October 10, 1956, bids to be returned and opened November 27, 1956.

B. Machines

Magnet - The Allis-Chalmers fabrication model has been received and has been set up for testing in the Service Building. The Westinghouse fabrication model assembly has been delayed due to the non-specification nature of the material furnished. Preliminary specifications for steel to be used in the AGS Magnet have been written. Formal inquiries including these specifications have been forwarded to five steel companies for comment. Only two bids for the Magnet Power Supply were received and these are being analyzed.

Linac - Linac tank diameter has been frozen. Considerable effort is now being expended on the Linac power model. Accelerator tube and pre-accelerator focusing system are under final design study.

Medical Research Center

This project is estimated to be 6.5% complete. During the month, the contractor started excavating for the Reactor Area Basement, started pouring floor slabs in the Hospital Sector, and continued pouring the Laboratory Basement floor slab, forming basement walls, forming the Laboratory main floor slab, setting utility inserts in the Laboratory slab forms and placing conduit and plumbing for the Hospital Sector floor slabs.

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Engineering Works Area

This project is estimated to be 9% complete. During the month, the contractor proceeded with work on grade beams, foundations, excavation of trenches and manholes, building manholes, installing ground cable and concrete conduit and completed the storm and sanitary sewers. The fabricator expects to start erecting steel about December 15, 1956.

Cosmotron

The Cosmotron ran satisfactorily until the latter part of the month when unusually large spillout of the beam was encountered. Attempts to locate the cause of this condition failed. On the night of October 26, one of the bolted connections between copper strips in the main generator rotor opened up. It is believed at this time that this break can be repaired without removing the rotor. Since the connection showed signs of prolonged arcing, this condition may have been responsible for the beam spillout.

During the three weeks of successful operation, a bubble chamber run for a Columbia group which yielded 40,000 pictures were completed. Another important experiment which had an effective run was one by a combined Princeton-Brookhaven National Laboratory counter group investigating the newly found neutral Θ_2 K meson.

The new hydrogen liquefier is now in satisfactory operation. Parahydrogen is being produced at a rate of 60 liters per hour.

60" Cyclotron

The work of repairing the water lines in order to reduce or eliminate velocity erosion has been completed. Tests indicate that these changes have been successful and the Cyclotron is back in operation.

Contract Actions

Negotiations were begun with Associated Universities, Inc., under Contract AT-30-2-GEN-16, looking toward agreement on a figure for Management Allowance for AUI during FY 1957.

Proposed prime contract with Babcock & Wilcox Company for LMFR-E was under consideration in the Washington Office during the month of October. Indications are that it will be sent to New York Operations Office shortly for signature of Babcock & Wilcox and the Manager of the New York Operations Office.

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Wright Air Development Center forwarded a modification to their contract covering the Shielding Program at Brookhaven National Laboratory. The modification extends the contract for another year. It is expected that it will be approved by New York Operations Office and distributed early in November.

Service Awards

On October 2, 1956, Merril Bisenbud, Manager, New York Operations Office, presented 10 and 20-year service pins to employees of the Brookhaven Area Office. It was noted that more than 50% of the Area Office Staff received the awards.

Research Reports

During October, 31 papers were approved for publication. This number included 24 on physical sciences, 6 on life sciences, and 1 general.

Visitors

The Laboratory was visited by the following, among others:

3 members of the Japanese Delegation and 3 scientific members of the Argentine Delegation to the United Nations Meeting on the International Atomic Energy Agency, on October 1.

55 members of the Instrument Society of America, on October 2.

Siegfried Heesemann, Chief of the Atomic Energy Division of the Ministry of Economics; Joachim Pretsch, Scientific Adviser to the Ministry of Atomic Energy Affairs; and Karl Vossler from the Federal Ministry of Labor, Republic of West Germany, on October 4.

61 scientists participating in a Molecular Beams Conference on October 5 and 6.

19 members of the Japanese Atomic Industrial Forum Mission, on October 9.

R. B. J. Patel and N. B. Prasad, Indian Architects, interested in Laboratory buildings, on October 17.

Cavid Erginsoy, member of the Turkish Research Reactor Project, on October 18.

86 delegates to the United Nations Meeting on the International Atomic Energy Agency, on October 20.

Georg Michael Kahn-Ackermann, of the West German Parliament and free lance journalist, on October 17.

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37 participants in the Fifth Tripartite Instrumentation Conference, October 22 - 26.

5 members of the Danish AEC, on October 24.

Dr. T. H. Johnson, Director, Division of Research, AEC, visited Brookhaven on October 22.

Mr. H. C. Brown, Assistant Director of Administration, Division of Biology and Medicine, AEC, accompanied by Mr. H. A. Stanwood, Chief, Program Coordination Branch on October 22.

Student's and Visitor's Days

The annual "Student Visitors' Day" was held on October 12. 4100 students attended. One innovation this year consisted of lectures to interested students on the Laboratory's programs in physics, in chemistry and in biology. Each of these three lectures was repeated a second time. Hundreds of students attended each talk and were encouragingly responsive during the question periods that followed. This innovation proved successful and similar lectures will be offered on future Student Visitors' Days.

The annual "Visitors' Day" for lay people was held on October 13. 3800 individuals attended.

AUI Board of Trustees

The annual Board Meeting of the Trustees of Associated Universities, Inc. was held on October 19, 1956. The newly elected Chairman of the Board is LaRoy B. Thompson, Director of Research Administration, University of Rochester. The two newly designated Trustees are Dr. Courtney C. Brown, Vice President in Charge of Business Affairs, Columbia University, and Dr. Edward M. Purcell, Professor of Physics at Harvard University.

USDOE 001084

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

DECEMBER 1956

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Property

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for the disposal of 149.3025 tons of contaminated wastes at sea for the Chicago Operations Office (Westinghouse Electric Corporation, Pittsburgh, Pennsylvania). Approximately 5.175 tons of contaminated wastes were also disposed of at Earle for Nuclear Metals, Incorporated Contract AT(30-1)-1565.

Negotiations are being made to acquire from the Oak Ridge Operations Office approximately 30,000 tons of ferrous metals scrap for use as shielding blocks by Associated Universities, Incorporated, Contract AT(30-1)-GEN-16; Harvard University Contract AT(30-1)-1909; Rochester University Contract AT(30-1)-875; Princeton University Contract AT(30-1)-1916.

Visits were made to Baker and Company, Newark, New Jersey to witness sampling operations and to Arthur D. Little, Incorporated, Contract AT(30-1)-1013 to effect property clearance due to contract termination.

Records Management

Approximately 170 linear feet of retired records which had been retained in the Records Center, have been destroyed. This made room in the Center for the receipt of a like quantity of records which are ready for retirement. Plans are being made for the establishment of a New York Operations Office Records Disposition Program pursuant to AEC Manual Chapter 0231, with the goal of accomplishing the objectives of the chapter before the end of 1957.

Dr. Warheit of the Washington Technical Information Service visited Administrative Operations on December 7, 1956, to discuss the proposed Civilian Application Library.

Contracts

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909

The Deputy Manager, the Director of Finance, and the Deputy Director of Contracts visited the University on December 27, in an effort to reach agreement on overhead. Both parties are agreed that the fixed overhead allowance should represent estimated actual cost, but questions still center about the distribution of costs and whether certain costs claimed by Harvard relate to the work.

Proposals were received by the University from potential suppliers for the 20 MEV linear electron accelerator. A project committee is to review these in January.

Harvard has received bids for construction of the laboratory building sub-structure. Since the University will not break ground, however, until all contract terms have been agreed upon and approved both in NYOO and at Headquarters, it has sought an extension of the low bid. The range of bids was from \$82,949 to \$118,537. The architect engineer had estimated \$115,500 for the job.

Massachusetts Institute of Technology

The Institute has renewed its request that NYOO consider a master contract to include all the contracts now at MIT. Exploratory discussions are scheduled for January.

New York University, Contract AT(30-1)-1480

The bids for alteration of space in NYU's building for the IBM-704 installation, which were issued last month, have been opened and are being analyzed. Additional work plus a contingency have increased the total estimated cost to \$500,000 and have delayed the scheduled completion date. If award can be made soon, it should be possible to have the space ready by March 15, 1957, the scheduled delivery time for the computer. A modification of this contract to provide for installation of the computer is in preparation.

Nuclear Development Corporation of America, Contract AT(30-1)-862

During the month there has been no progress toward dissolution of the impasse which exists on the matter of overhead. A specific statement of reasons for those items disallowed by NYOO is being drawn up at the request of the contractor.

Nuclear Development Corporation of America - Chugach

The NYOO Assistant General Counsel represented the office as an observer at a negotiation meeting in New York between Schenectady Operations Office, NDCA and Chugach. NYOO is preparing comments to Schenectady concerning the contract draft presented at this meeting.

Nuclear Metals, Inc., Contract AT(30-1)-1565

The final draft of the contract modification to sell the AEC equipment at the AEC Metallurgical Laboratory to Nuclear, its present operator, and to make the Hood Building and other space available to it for private work was completed and sent to the contractor on December 20. By the end of the month only minor comments had been received. NYOO has assigned top priority to writing the transmittal and justification necessary to submit this action to Headquarters early in January.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238

Further study has been given the Princeton proposal that the AEC guarantee amortization for expansion of the general facilities at the Forestal Research Center to support this project. NYOO expects a preliminary proposal early in January for the preparation of a new site for future work.

Princeton University, Accelerator Project, Contract AT(30-1)-1916

The draft of the definitive contract, mentioned last month, has made slow progress because of the priority status assigned to the Nuclear Metals and Harvard contracts. Now that both of these are virtually complete, the negotiation of this definitive contract can receive more attention. Cost control procedures are being worked out and seem to be in almost final form.

Sylvania Electric Products, Inc., Contract AT(30-1)GEN-366

NYOO met with Sylvania to explore the implications to its contract of the newly formed Sylvania Corning Nuclear Corporation. Sylvania anticipates that the new corporation will be ready to undertake the responsibility for the present research and development contract early in the Spring of 1957.

Material Loan Contracts

Contract documents have been written for the following material loan contracts:

New York University - proposed contract AT(30-1)-1870. During the month the University wrote to Headquarters to request an exception from AEC patent policies as these apply to loan contracts.

College of the City of New York - proposed contract AT(30-1)-1959.
The contract was mailed to the college.

Receiving staff review are:

MIT proposed contract AT(30-1)-1966
Yale University, proposed contract AT(30-1)-1970
University of Maryland, proposed contract AT(30-1)-1971

Pennsylvania State University, proposed contract AT(30-1)-1859

NYOO is still waiting for clarification of the University's position on patent and reporting requirements, which has been long delayed.

Manager's Office

Visit by B. G. Beckhoefer of the Division of International Affairs re International Atomic Energy Agency.

Dr. Scott Russell, Harwell Agricultural Research Council, re metabolism of strontium 90 in plants.

W. K. Maher, Deputy Director, Division of Construction & Supply to discuss plan to use project engineers to appraise engineering and construction functions of operations offices.

Personnel

Federal Personnel Statistics

During the month the following personnel activities took place:

62 interviews with prospective candidates
22 screening preliminary or courtesy interviews
35 interviews with candidates and operating officials
4 selections of outside candidates
10 job evaluations completed
7 permanent appointments made

Miscellaneous

An incentive award and \$10 were presented to Judith L. Sugarman, HASL.

Public Information

The Director, Public Information Service, met with the Supervisor of Science for the New York City Board of Education, and subsequently with representatives of the Institute of Radio Engineers to plan a teacher training course to be held in conjunction with the IRE meeting in March of 1957. Although the Board of Education was enthusiastic about the particular plan under consideration, the IRE felt that it would be better equipped to cooperate in such a program after its educational committee, now being established, had had some operating experience.

Discussions were also held with Board of Education representatives regarding the possible up-dating of the booklet, "Laboratory Experiments with Radio-isotopes for High School Science Demonstrations." This booklet originally grew out of an in-service training course for high school science teachers conducted by the New York City Board of Education with the aid of the New York Operations Office. The NYOO has indicated to the Board of Education its willingness to conduct another workshop for teachers during the Easter vacation so that the booklet may be supplemented. George Glasheen, Chief of the Educational Services Branch, Washington, is investigating the possibility of payment to the teachers during the time the booklet is being written.

During the month review was made of an article on strontium 90 in milk prepared for the American Milk Review by a staff reporter who interviewed HASL personnel. The article, which appears in the December 1956 issue under the title, "What is This Strontium 90 Business?", comes to the conclusion that, "The greater immediate danger to the economic structure of the milk business lies in the spread of this false belief (misinformation given in other publications) rather than in the facts of milk and strontium 90 as they are."

During the report period, 109 films were shown to 4,796 people. This is an unusually high number for the month of December, which has been heretofore somewhat lower than others because of the lengthy school vacations.

Security

During December, 114 clearances for access to secret data and 117 for access to confidential data were granted to Access Permittees by the Security Division. Requests for 96 secret and 76 confidential clearances were received for processing in the same period.

Technical Liaison Division

During the month under review, five new access permits were assigned to NYOO. Of these, four were in the Secret Restricted Data category. In addition, two were amended to include Secret. This brings the total of access permits assigned NYOO to 371. Of these, 181 have access to Secret Restricted Data and 190 have access to Confidential Restricted Data.

HEALTH AND SAFETY LABORATORY

Nuclear Safety Review Board

The following feasibility reports were approved by the Nuclear Safety Review Board:

NUCLEAR METALS FEASIBILITY REPORT: NMI-FR-2 CORROSION TESTING OF ISLAND PT TYPE FUEL ELEMENTS FOR METALS AND CONTROLS, INC. - 11/9/56

NDA FEASIBILITY REPORT NO. 7: FABRICATION OF APFR FUEL ELEMENTS, AEC (SCHENECTADY OPERATIONS OFFICE) CONTRACT AT(30-3)-21, NDA PROJECT NO. 2063 - 11/21/56

Field Studies

Allied Chemical

At the request of the Production Division, Washington and Allied Chemical and Dye Company, Mr. Brannigan of the Washington office and Mr. Harris consulted with personnel of Allied's General Chemical Division. The purpose of the consultation was to advise on matters of health, safety, and fire protection in the design of the new UF₆ plant which the company is building under a unit price contract with the Commission. A summary of Commission experience in the handling of the materials which were involved in the production of UF₆ was presented to the interested parties.

Aberdeen Proving Ground

At the request of Dr. Aminia Nordio, of Picatinny Arsenal, a visit was made to Aberdeen Proving Grounds to consult on matters of potential uranium toxicity.

It appears that the Proving Ground is carrying on some destructive testing of natural uranium, and some of the safety personnel have been deeply concerned about the potential toxicity of the airborne material. A meeting was called by the Commanding General which was attended by 30 people. Commission experience in the handling of uranium materials was presented to the group by Mr. Harris. As a result of this meeting, it was decided to continue the test work without prejudice.

Industrial Inquiries

During the past month, HASL assistance has been given either by conference, telephone, or letter to a large number of individual firms. These firms have requested such information for the handling of uranium, beryllium, and miscellaneous materials. The following partial list is representative of the inquiries:

N.Y. State Dept. of Labor
Westinghouse, Philadelphia
Autonetics, Downey, California
Nuclear Instrument & Chemical, Chicago
U.S. Public Health Service, Cincinnati
Aeroprojects, Inc., West Chester, Pa.
General Dynamics, San Diego, Cal.

Beryllium
Sr 90 Waste Disposal
Beryllium
Beryllium (and isotopes)
2% beryllium copper
Beryllium
Beryllium

National Lead Company Grand Junction Pilot Plant

Copies of report HASI-NI-1 have been transmitted to the GJOO and to the Division of Raw Materials in Washington. This report covered a survey of airborne dust and radiation exposures at the Grand Junction Pilot Plant which is operated by the National Lead Company. Of the 79 employees who were studied, all but three had exposures which were less than 50 d/m³. Only one of the remaining three had a really significant exposure. This man was exposed to uranium dust of concentrations of approximately 350 d/m³.

Direct radiation and radium concentrations were found to be insignificant. Several recommendations were presented with the report. These recommendations were largely of a procedural nature. A drawing was submitted, however, which shows a suggested modification of the yellow cake barreling and sampling operation.

Nuclear Metals, Inc.

A visit was made to examine the status of moving the major portion of the operations from the Hood Building to 224 Albany Street. At the time of the visit a relatively insignificant portion of the move had been completed. As a result of the visit which was made by Messrs. Neil, Solon, and Harris, strong recommendations have been made to Nuclear Metals to accelerate the removal of personnel and hazardous operations from the dangerous location of the Hood Building. Particular attention was paid to the proposal to erect a single-level, fire resistant building in the parking area of the Albany Street building for the storage of special nuclear material.

Redwing

Correlation of rainfall and gummed paper fallout data is being made in an effort to tie down some of the factors relating to the deposition of activity during the Redwing periods. The reports are still being written.

University of Michigan Accelerator Survey

Members of the Radiation Branch conducted measurements of stray radiation at the cyclotron and electron synchrotron of the University of Michigan on December 3-6. Preliminary evaluation of the measurements indicate that supplementary shielding is required at the cyclotron site. A detailed report is in preparation.

Projects

Background Measurements

A 20 liter air atmospheric ion chamber with fully guarded collecting electrode has been designed and will be assembled for use by the Radiation Branch in January.

DTR System

Generally speaking the relays and other short supply components are now being received and will permit assembly of the central station; one beta tape unit and inter-wiring of the system for check during February. Work is proceeding satisfactorily with no major difficulties developing.

The chassis for accepting modules for the time, the time plus count and control are now practically designed with prototypes in preparation for quantity wiring by an outside vendor.

The following installation is planned:

1. Central Station, punch card station, and a single beta tape counter to permit close check of the system.
2. Installation of the pair of beta tape counters.
3. Installation of the dial counters.
4. Approximately simultaneous installation of the radon equipment with dial counters.
5. Installation of low level counting equipment.
6. Other miscellaneous equipment.

Energy Distribution of Background Radiation

The spectral distribution of terrestrial background radiation has been investigated and preliminary curves calculated for certain idealized models which it is believed bound the actual distribution. The two limiting distributions have been derived for plane isotropic and uniformly distributed full-space source geometries. Work is continuing on obtaining a more precise dose distribution for a half-space geometry with the necessary computational work being performed on a digital computer, either the NYU UNIVAC or the National Bureau of Standard's Seac.

Image Intensifier Scanning Tube

The 16" conical structure has been built but did not operate satisfactorily due to improper placement of the focusing hemisphere which was located too close to the face plate. The structure has been torn down and will be rebuilt with the focusing hemisphere approximately 12" away from the face plate. By use of a distorting electrical field it may be possible to focus the image without excessive "pin cushioning" or barrelling.

Radon Background Sampling

Approximately 40 flask samples have been obtained in various locations for the measurement of radon background. An attempt has been made to vary the samples both temporally and geographically. Unfortunately, however, it has not been possible to do both simultaneously. Samples have also been collected for the measurement of radon daughters. It is believed that within another month a significant amount of information will be available for making a preliminary definition of the radon background in this area.

Total Body Radiation Measurements

Planning has been continued on the design of a system. Visits will be made to operating installations to get ideas for formulation on types of shielding. In an effort to eliminate liquid phosphor construction, vendors have been asked to submit quotations on 18" sq. x 3" or 6" thick plastic phosphors with a 40" radius of curvature concavity molded in to accept a 16" Dumont multiplier phototube face plate directly coupled. Because of the reduced finish specifications it is feasible to cast the part directly in simple molds. With the ease which these phosphors can be formulated it is expected that for the quantity involved it may be possible to select the solid phosphor over the liquid.

An 8" dia. x 4" thick sodium ionide phosphor is to be ordered with a guaranteed potassium content less than 1 part per million.

US. Coast Guard

Tentative arrangements were made with the Captain of the Port's Office, US Coast Guard for the utilization of an eighty-three foot Coast Guard vessel in order to make radiation measurements in the rivers and channels of the NY Metropolitan area. First such measurements are planned for early January.

Laboratory Work

Fallout

5,394 fallout samples were processed during this period.

Sample Analyses

The Analytical Branch analyzed 345 samples of the following:

Uranium - Urinary 19, Misc. 108
Beryllium - Air Dust 119, Misc. 25
Radium - Urinary 3, Misc. 4
Radon - 47
Miscellaneous - 20

Miscellaneous

Meetings

H. Blatz, Chief of the Radiation Branch presented a paper entitled "Radiation Hygiene Aspects of Surface Contamination" before the Radiological Society of North American meeting in Chicago, December 4-7.

J. Harley, Chief, Analytical Branch spoke on fallout at the Hotel Roosevelt, New York City on December 6 before a group on Industrial Medicine. He also attended a meeting in DEB offices in Washington with respect to decontaminating the Marshall Islands on December 17.

Ira Whitney, Analytical Branch visited the ORNL Analytical Division on December 5 and also attended the American Chemical Society meeting in Memphis, Tennessee on December 6-8.

Publications

"Open Field Burning of Low Level Radioactive Contaminated Combustible Wastes" by WB Harris and M.S. Weinstein, "The Generation of A Solid Sub-Micron Test Aerosol," by H. Glauberman and A.J. Breslin were published in the December issue of the AIHA Quarterly.

Visitors

Pere Loysen, Metals & Controls, Attleboro, Mass, to discuss industrial hygiene and analytical methods.

Dr. Lyle T. Alexander of the Soil Survey Service, Beltsville, Md. to discuss the strontium program as well as the pot sampling program.

Dr. Herb Volchok of Isotopes, Inc. to discuss the strontium contracts.

Dr. Scott Russell, Harwell-Agricultural Research Council re analytical methods and the strontium program.

Perry Armangac of POPULAR SCIENCE to discuss the chart he has prepared in connection with his proposed article.

Dr. Takeo Szuzuki of the Japanese Public Health Institute with respect to industrial hygiene and analytical methods.

Gordon Cameron, Physicist, NYC Hospitals to discuss state regulations pertaining to radiation protection.

Dr. Morris Shamos, Acting Chairman, NYU Physics Dept. to discuss background measurements with ionization chambers.

George Morton, Project Engineer with Airborne Instruments to discuss techniques of evaluating nuclear-track film used for neutron monitoring purposes.

Messrs. Frederick Brech and RK Brehm of Jarrell-Ash Co with respect to fluorimetric Analyses.

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SECTION II

BROOKHAVEN NATIONAL LABORATORY
MONTHLY STATUS AND PROGRESS REPORT
FOR DECEMBER 1956.

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

During the month, the Tunnel Shell was completed along with the north conjunction section and retaining wall. Seven cars of structural steel for the Linear Accelerator Bldg. which is approximately 1/4 of the total, were received at month's end. It is anticipated that structural steel erection will be started on January 3, 1957. A general construction subcontract between AUI and the Malan Construction Corp., low bidder at \$2,872,000 for construction of the Linear Accelerator and Target Bldgs. was prepared and transmitted to the AEC for approval.

Synchrotron design continued. BNL has recommended award of the Main Magnet Power Supply to the Westinghouse Electric Corp. after evaluation of the proposals submitted by General Electric and Westinghouse. The contract documents and documentation were received by the Brookhaven AEC office and submitted to NYOO for approval on December 20, 1956.

Medical Research Center

During the month, the contractor made the initial pour of the laboratory main floor slab, continued forming for the laboratory main floor slab, made initial pour on Reactor Bldg. foundation wall. Structural steel erection was completed on the hospital nursing unit structures. Additional basement slab was poured during the month. The Reactor shutters were completed and have been received at the job site.

Engineering Works Area

At month's end, all of the building excavation was completed. All concrete has been installed except the floor slab which is 45% complete and curbing and mats for the transformer station. Power, water, gas, storm and sanitary sewers are 100% complete. All yard work is complete except for the Ricwil steam main which is 40% installed. It is anticipated that structural steel will arrive and erection be started during the week of January 7, 1957.

Liquid Metal Fuel Reactor Experiment

The Babcock & Wilcox Company has issued the first Quarterly Technical Report summarizing their work on the LMFRE for the period July 1, 1956 to November 15, 1956 under contract AT (30-1) - 1940.

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Brookhaven Research Reactor

On December 21 the reactor was shut down for extended maintenance and re-loading during the Holiday period. A central core of normal fuel elements was ejected and 35 channels were reloaded with highly enriched U₂₃₅ fuel elements. The reactor was placed in operation on January 1, 1957 without any serious difficulties arising. The next months will be used to study the effect of these elements on reactor operation in preparation for the conversion of the entire reactor to enriched fuel.

Brookhaven Mid-Year Review

The Mid-Year Review FY 1957 Financial Plan was sent to NYOO on December 7, 1956. A brief summary is as follows:

B&W proposed an increase of \$900,000 in order to push forward the research program at a rate required to meet the projected schedule. BNL proposed an increase of \$32,000 for the entire Laboratory, which would involve the following program changes:

4000 Program	+ \$220,000.
5000 Program	- 320,000.
6000 Program	+ <u>132,000.</u>
Net Increase	+ <u>\$ 32,000.</u>

Detailed justification for the changes was submitted by both contractors.

Management Actions

Laboratory officials informed the Area Office on December 20 of their intention to revise the Retirement Plan. The revision would increase pension costs about 30%. Organization & Personnel Division, NYOO, was informed of the pending revision.

B&W submitted a draft of its proposed procurement policy for review. With the concurrence of B&W on several additions desired by AEC, the policy will be approved by the Area Manager.

Contract Actions

The Contract Review Board, NYOO, on December 14, approved Area Office negotiations with AUI for a Management Allowance of \$150,000 for FY 1957. A supplement to the AUI Contract, AT-30-2-GEN-16, is pending, which increases the Contract by \$10,000,000 as a result of the approved Financial Plan dated October 26, 1956.

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Visitors

Visited BNL during the month of December, among others:

December 3-7, 1956, Dr. Vohra and Mr. Vaze, Indian Nationals visited Brookhaven for a one week training course in instrumentation.

Dr. Anil Ganguly, an Indian National, visited Brookhaven December 3-14, 1956.

On December 5, 1956, the Atomic Industrial Forum made an unclassified tour of the Laboratory.

December 6, 1956, Jens C. Hauge visited Brookhaven National Laboratory. He is the Norwegian Representative to the Organization for European Economic Cooperation.

3/21	Dr. Norton Nelson	Harley	Ruthenium Project
3/21	Col V. H. Hudgins, DMA	Blatz	
3/22	J. S. Kelly, DMA D.L. Gale, USNRL W. Rohe, NRL		
3/22	Mr. Gilbert, Washington AEC	Harris	Mercury vapor detec
3/25	Dr. E. Tajima, UN Scient. Com. on Eff. of Atom. Rad.	Harley	fallout collection
3/26	Miss M. Shapiro, Am. Cancer Society, NYC Div.	Lough	preparation of chapter for Society' book
3/27	Dr. Paul Pearson, Washington DBM	Harley	collection & analysis of food samples
	Prof. Joseph Steigman Bklyn. Polytechnic Inst.	Harley	Strontium analysis
	Dr. Bernard Altshuler, NYU	Blatz	

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SECTION II

BROOKHAVEN NATIONAL LABORATORY
MONTHLY STATUS AND PROGRESS REPORT
FOR MARCH 1957

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

Detailed design continued on the Synchrotron, and solicitations were issued for proposals for the Magnet Coils and the Ferrites. Proposals for the Magnet Core procurement are now due on April 22, 1957.

The General Contractor engaged in construction of the Linear Accelerator and Target Bldgs. and electrical and mechanical work for the Tunnel. Excavation for the Target Bldg. slab and the pile caps was started. The Target Bldg. crane was raised into position during the month. Bids were received for three large cooling water wells, the low bid was \$26,000. The High Density Shielding Block proposals received on the second submission were so nearly equal at about \$800,000 that it was decided to procure four proto-type blocks from each of the two low vendors to demonstrate their ability to meet density and other requirements.

Overall project reevaluation is under way. Due to lag in procurement of main components for the machine, it is anticipated that the final reevaluation will be delayed sufficiently to give effect to the results of solicitations for the larger critical items.

Medical Research Center

This project is now 24% complete. The main Laboratory floor slab should be completed by April 15, 1957. The Reactor Container foundation was completed and miscellaneous foundation work was started in the Reactor wing.

The erection of roof bar joists was completed up to the Laboratory Sector and erection of structural steel started in the Laboratory Sector. The brick contractor is continuing to make good progress in the Hospital Sector and should complete up to the Laboratory around May 1, 1957.

The Daystrom Company continued fabricating and testing Reactor components and instrumentation. Delivery of some of the components is expected to start during April.

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Engineering Works Area

This job is now 60% complete. During the month, the contractor installed concrete curbs for roof fans and started the waylite block partitions, window sash and roof cant strips and rolling steel doors. The various contractors continued the installation of aluminum wall panels, steam and condensate piping, plumbing and electrical work inside the building. The installation of the Sub-Station slab was started.

Liquid Metal Fuel Reactor Experiment
(Babcock & Wilcox Co.)

LMFRE work is progressing in fabricating of the prototype loop which should be completed shortly. The Deming bismuth pump has been returned to the vendor for dynamic balancing and checking of seals.

The parametric study for U-Bi-C reactors has been completed, and the results converted to fission densities. Reactivity effects have been calculated to evaluate the control problems. Reactor kinetic equations have been coded and tried out on the computer. The experimental physics test program for the operational LMFRE has been revised.

Four possible reactor sites for the experimental reactor have been visited and information obtained on facilities and meteorology.

Design parameters for initial power (20MW) operation of LMFRE were established by using 750 F. reactor inlet and 885 F. reactor outlet with a possibility of increasing power to 33 - 1/3 MW by raising the reactor outlet to 975 F. keeping the flow rate constant.

Calculations have been made regarding temperature distribution for various channel sizes and power levels at normal flow and for plugged channel conditions. Pressure drop was calculated for various core hole sizes.

An outline of tentative remote maintenance and containment ground rules has been developed to provide a source of maintenance planning information. Remote maintenance mechanics and philosophy for the LMFRE have been reviewed with ORNL personnel.

Cosmotron

The repair of the coil of Quadrant 2 is proceeding. One half of the lower nose coil and one quarter of the back coil (in the gap) have been installed. The remaining bars are being tested and repaired as necessary. The bar which failed and the similar ends in the lower nose coil (four ends in all) were replaced with a redesigned end. The new end has a greater thickness at the bend and a larger radius of bend. Some of the ends of the back coil had relatively deep scorings which were made in the initial construction of the coil. They have been replaced.

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Along with the repair of the coil, new adjustable "kicker" bars have been installed in Quadrant 1. These new "kicker" bars wedge the back coil tightly against the back of the gap and are adjustable from the outside of the Cosmotron magnet. The original "kicker" bars could be adjusted only by removing the vacuum chamber which is a very time-consuming operation.

A new coil clamp for the end returns of the main winding was tested along with the new "kicker" bars. As a result, the motion of the coil has been limited to something less than 1/2 of what existed previously, thus reducing the strain experienced by the ends of the conductor bars. The chance of a break occurring under these new conditions would seem to be greatly lessened. The new "kicker" bars and coil end clamps will also be placed on all four quadrants.

The machining of the vacuum chamber of Quadrant 2 for the proposed meson beam has been completed. The chamber is being reassembled. It is expected that it will be tested and ready for installation during the next month. Resumption of the research program is now scheduled for the two weeks between June 15 and July 1.

18" Cyclotron

During this period, the studies of the $\text{Cu}^{65} (p,n)\text{Zn}^{65}$ reaction have been continued. A very careful series of measurements were made of the proton energy from the machine, with the result that $E_p = 3.037 \pm 0.028$ Mev. With this proton energy and the neutron energies observed from the reaction, the energy balance gives $Q = -2.148$ Mev which is to be compared with the published value $Q = 2.132$ Mev. Some measurements have been made of the angular distribution of the neutrons from the above reaction. In order to interpret these measurements properly, the neutron detection sensitivity-function has been measured by observing the angular distribution of neutrons from a tritium target.

The cyclotron has operated quite satisfactorily for these measurements. A small degree of beam instability was experienced during the attempts to obtain a precise measurement of the proton energy. Some of this instability was traced to variations in the magnet current, and a considerable improvement was achieved by increasing the radio-frequency shielding of the magnet regulator circuit. It is expected that further improvement in beam stability will be realized by the incorporation of automatic oscillator-frequency control in the near future.

A graphic recorder has been added to the output of the 100 channel analyzer. This recorder gives a plot of the number-of-counts versus channel-number in addition to the numerical print-out which had been used before. Such a plot is sufficiently precise to show the trend of the data in some detail and eliminates the need for manual plotting of the data in most cases. For those instances in which a more precise plot is required, as for example when area under the curve is desired, the data recorded on the numerical print-out has to be plotted manually point by point. This graphic recorder will, however, be a great time-saver.

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Contract Actions

Negotiations were started on March 20, 1957, between Associated Universities, Inc. and AEC, for renewal of AUI's Prime Contract for the operation of BNL which expires on June 30, 1957.

Union Carbon and Carbide Corporation continued its review of the draft sub-contract under the Babcock & Wilcox Company prime contract for the LMFRE Project.

The budget call for preparation of FY 1959 budget estimates was sent to AUI and B&W.

Requests have been forwarded to the Washington Office for approval of the use of the BNL reactor and related facilities in cooperative research projects with the Westinghouse Electric Corporation and General Dynamics, Inc.

18" Cyclotron Building - Reclamation Facility & Hot Laundry

Contracts for Architect-Engineer services for these projects were entered into on February 25, 1957 with the firm of Jenks and Ballou, Providence, Rhode Island. Design work was started March 4, 1957.

Declassification Action

The declassification of the Liquid Metal Fuel Reactor project made it possible to designate the Nuclear Engineering Department Building, T-197, as an unrestricted area. However, as the Classified Library is still in this building, access during the day will be controlled by a receptionist and special arrangements with the Laboratory Police Department will be made for entry after working hours.

Research Reports

During this period 36 papers were approved for publication. This number included 29 on physical sciences, and 7 on life sciences.

Visitors

The Laboratory was visited by the following, among others:

Paul R. Jolles, Swiss, Executive Secretary, Preparatory Commission for International Atomic Energy Agency, and Dr. Robert B. Von Meren, U.S., member of Jolles' staff, on February 28.

Willem L. Van Lakerfeld, Netherlands, Director for Industrial Investments of Ministry for Economic Affairs, and Joseph P. Bourdrez, General Manager of Netherlands Industrial Institute in New York, on March 4.

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Anthony W. Pereira, Sadanand V. Kasargod, and Gavaraputtu S. Krishnaswamy, staff members of the Indian Atomic Energy Establishment, Bombay, on March 4.

Yasushi Nakai, Mitsubishi-Nippon Heavy Industrial Manufacturing Co., and Hirogi Shimamune, Japanese Atomic Energy Research Institute, on March 7.

George K. C. Yeh, Foreign Minister of China, accompanied by Hsieh Ren Wei of Chinese Mission, U.N., on March 15.

Two members of the Japanese Atomic Energy Research Institute and three representatives of the Japanese government and universities, on March 18.

Y. Goldschmidt-Clermont and Louisella Goldschmidt-Clermont, Belgians, from European Organization for Nuclear Research, on March 18-20.

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U. S. ATOMIC ENERGY COMMISSION
Health & Safety Laboratory

EXTERNAL ENVIRONMENTAL RADIATION LEVELS

IN NEW YORK STATE

Leonard R. Solon
Harris D. LeVine
Albert V. Zila
Hanson Blatz

Received 4-22-57
attached to
NYOO Status & Progress
Report for March 1957

JH
RH JB

ABSTRACT

Preliminary measurements have been made of external environmental radiation levels in New York City and upper New York State using an air-filled ionization chamber inside an automobile. The purpose of these measurements was to establish the approximate range of population exposures to the penetrating environmental radiation component - cosmic radiation and terrestrial gamma radiation -- but excluding terrestrial beta radiation.

Measurements indicate a substantial degree of uniformity in the environmental radiation level over areas of widely different geological structures provided measurements are made somewhat removed from outcroppings of naturally radioactive rock.

Aside from special situations described in the table accompanying this note, levels in upper New York State ranged from a low of 7.2 microroentgens/hr to a high of 10.4 microroentgens/hr. One situation of elevated activity was in a Mineville lot with the high level apparently attributable to mine tailings used as fill. Several blocks away on an occupied street of the same town, the measured radiation dose rate was 10 microroentgens/hr.

A measurement inside an Alexandria Falls church built of solid granite block furnished a radiation level of 18.5 microroentgens/hr compared with 9.5 microroentgens/hr in the street outside the church.

INSTRUMENTATION. Measurements were made with a 20-liter ionization chamber filled with air at atmospheric pressure. The resulting ionization current was measured with a vibrating reed electrometer (Applied Physics Laboratory Model 30). The wall of the chamber was 3/32" polyethylene. To suppress completely the beta response, the chamber was positioned in a solid 1/8" aluminum frame so that, including the polyethylene wall, the gas volume was enclosed by $1.08 \frac{\text{g}}{\text{cm}^2}$ of material corresponding to a Feather range of a 2.26 MeV beta particle.

The ion chamber was calibrated with an encapsulated radium standard which had in turn been calibrated at the National Bureau of Standards. The measured calibration factor for the ion chamber was $1.79 \times 10^{-15} \frac{\text{ampere}}{\text{microroentgen/hr}}$ though for certain of the measurements, a small quantity of freon-12 mixed with the air filling increased this sensitivity to $2.08 \times 10^{-15} \frac{\text{ampere}}{\text{microroentgen/hr}}$.

Power for the vibrating reed electrometer and an Esterline-Angus graphic recorder was obtained from an alternating current inverter operated from the 12-volt automobile storage battery.

CONCLUSION. Insofar as the measurements reported here indicate, the outdoor penetrating environmental radiation level in New York City and New York State lies mainly in the interval of 7 to 11 microroentgens/hour with appreciable departures from this range probable only at points within several feet of exposed minerals having an elevated radioactive content.

It is the opinion of the writers that this substantial uniformity in the penetrating radiation component from natural sources suggests that any physiological variations in population groups dwelling in the different parts of New York State measured are not attributable to differences in the external environmental radiation.

	<u>LOCATION</u>	<u>RADIATION LEVEL</u> (microroentgens/hr)
<u>March 12, 1957</u>		
1.	New York City, Central Park Boathouse Parking Field	8.2
2.	New York City, Central Park; near rock outcroppings	9.3
3.	New York City, 132nd Street & 12th Avenue; over Belgian block paving*	13.3
4.	New York City, West Side Highway, west of Grant's Tomb and Riverside Church - Belgian block paving.	11.7
5.	New York City, 96th Street; parking area off West Side Highway, over asphalt paving.	8.5
6.	New York City, between 71st and 72nd Street on West End Avenue, over asphalt or macadam paving.	10.2
7.	New York City, between 67th and 68th Street over Belgian block paving.	14.6
8.	New York City, basement, garage of New York Operations Office, 70 Columbus Avenue, be- tween 62nd and 63rd Street.	7.0
* Frequently referred to by New York City residents as "cobblestones".		
<u>March 26, 1957</u>		
1.	New Jersey, outside Lincoln Tunnel, about 200 feet from N. J. portal.	9.9
2.	New York City, inside third tube of Lincoln Tunnel at mid-river.	6.4
<u>April 1, 1957</u>		
1.	7.7 miles north of Saugerties on U. S. 9W; 0.3 miles east of 9W on dirt road	9.5
2.	Off same road; 0.8 miles east of 9W on plowed field.	9.5
3.	Off same road; 1.2 miles east of 9W	9.0

	<u>LOCATION</u>	<u>RADIATION LEVEL</u> (microroentgens/hr)
<u>April 1, 1957 (Continued)</u>		
4.	Blenheim; off N. Y. 30; near cemetery and farm house.	9.2
5.	West of Sharon Springs on U. S. 20; in road cut through black shale	10.5
6.	2 miles east of (5) off U. S. 20	9.0
7.	Albany; intersection of Fuller Rd. and Washington Avenue; over sand.	8.0
<u>April 2, 1957</u>		
8.	Between Warrensburg and Lake George; on U. S. 9, 1.4 miles north of junction U. S. 9 and N. Y. 9N; near granite outcroppings; P. 44 TEI-70+	12.5
9.	Same as (8); 2.4 miles north of junction U. S. 9 and N. Y. 9N; granite and basic rock; P. 44 TEI-70	15
10.	Same as (8); 3.2 miles north of junction U. S. 9 and N. Y. 9N; basic intrusions in gray granite; P. 44; TEI-70	11.5
11.	0.2 miles north of (10); near farm house; removed from outcroppings nearby	9.2
12.	4.1 miles west of Warrensburg on N. Y. 418; near glacial bank of granite and gneiss, P. 43, TEI-70	11.5
13.	1.1 miles south of Silver Bay, off N.Y. 9N	10.2
14.	Hague; town parking lot	9.5
15.	1 mile north of Ticonderoga, off N. Y. 9N	8.2
16.	Crown Point, near St. Frederick Hotel	8.0
17.	Port Henry; near Lake Champlain	6.0

+ Unpublished report; TEI-70, Reconnaissance of Radioactive Rock of the Hudson Valley and Adirondack Mountains, New York, Perry F. Harten, Francis A. McKeown; May, 1952.

	<u>LOCATION</u>	<u>RADIATION LEVEL</u> (microcentgens/hr)
<u>April 2, 1957 (Continued)</u>		
18.	Port Henry; adjacent to Republic Steel mine tailings pile.	40.0
19.	Mineville; on vacant lot with mine tailings for fill.	17.0
20.	Mineville; on occupied street of frame houses; first street south of (19)	10.0
21.	Klisabethtown; off U. S. 9	7.2
22.	Keene; in sand quarry of N. Y. 9 N	7.5
<u>April 3, 1957</u>		
23.	Benson Mines; on mine tailings dump	12.4
24.	Star Lake; across from church	10.4
25.	Oswegatchie; across from church	10.0
26.	Fine; town sand pit; 0.8 miles west of Oswegatchie off N. Y. 3; sand pit contains some pink granite.	10.5
27.	Fine; adjacent to pink granite outcroppings near intersection of N. Y. 3 and N. Y. 58	12.2
28.	Between Fine and Edwards; off N. Y. 58; 2.2 miles south of junction of N. Y. 3 and N. Y. 58, pink granite outcroppings	10.8
29.	Edwards; center of town; in street	8.0
30.	Gouverneur; approx. 1/4 mile south of airport; over fine sand, off N. Y. 11	8.0
31.	Between Gouverneur and Brasie Corners; off N. Y. 58; 2.5 miles east of ⁴ Brasie Corners; adjacent to red granite outcroppings.	14.0
32.	Essentially same location as (31) except further away (approx. 60 feet) from outcroppings; several hundred yards along road.	9.8
33.	Hammond; near town house; 0.5 miles south of intersection, N. Y. 185 and N. Y. 37	8.5

	<u>LOCATION</u>	<u>RADIATION LEVEL</u> (microrentgens/hr)
<u>April 3, 1957 (Continued)</u>		
34.	Alexandria Bay; village Park near granite outcroppings	11.8
35.	Alexandria Bay; across street from (34) away from outcroppings	9.0
36.	Alexandria Bay; in street outside R. C. church	9.5
37.	Alexandria Bay; in R. C. church vestry.	18.5
38.	Stone Mills; 6.4 miles along N. Y. 180 south of Lafargeville; near pasture.	7.2

ACKNOWLEDGEMENTS

The writers would like to express their thanks to Dr. John T. Gentry, District State Health Officer of Syracuse, New York, for his cooperation in selecting areas of upper New York State for measurement and accompanying us during the survey.

We should like to acknowledge the assistance of Mr. Herbert Kaul, New York Port Authority for arranging entrance into the unfinished third tube of the Lincoln Tunnel.

We acknowledge the customary effective aid of the Health and Safety Laboratory Instruments Branch, in particular Mr. Robert Graveson and members of the machine shop.

Professor Morris Shamos of the New York University Physics Department has contributed helpfully in several discussions of low radiation level measurements.

UNITED STATES GOVERNMENT PRINTING OFFICE

WASHINGTON, D. C. 20540

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

JANUARY, 1957

Prepared by the Staff of the NYOO Operations Office

January 26, 1957

USDOE 000374

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

JANUARY 1957

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Procurement and Traffic

A recapitulation of purchasing activities for calendar year 1956 showed a total of 2,555 transactions for \$432,094. The average number of purchase transactions per month was 213, totalling approximately \$36,000 or \$169 per transaction, with an average of 2.25 items on each order.

Property

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for the disposal of 526.54 tons of contaminated wastes at sea for the Chicago Operations Office (Westinghouse Atomic Power Division, Pittsburgh Area). Approximately 5.175 tons of contaminated wastes were also disposed of at Earle for Nuclear Metals, Inc., Contract AT(30-1)1565.

During the quarterly reporting period arrangements were made for the acquisition of \$87,920.75 worth of excess property for utilization by contractors and direct operations at a cost of \$16,764.29. This represented approximately 19% of acquisition cost and resulted in savings of \$71,156.46.

Further excess property utilization was effected from NYOO excess lists (Contractors and HASL) by other Operations Offices and their Contractors in the amount of \$14,035.36 at an average cost of approximately 5% for a savings of \$13,442.34.

There were 106 trips made by 6 vehicles for a total of 9,746 miles travelled.

There were 5,335.334 troy ounces of contaminated and uncontaminated platinum received for processing during the quarter worth approximately \$533,533.40. Shipped out during the same period were 1164.314 troy ounces of pure platinum for a total value of approximately \$116,431.40.

Records Management

One access permittee visited this office during the month and approximately 15 telephone calls were received from access permittees requesting information.

Telecommunication

breakdown of telephone and teletype traffic for the months of November, December and January showed the following:

	<u>November</u>	<u>December</u>	<u>January</u>
Local Calls	8,827 cost \$400.97	9,428 cost \$428.02	8,964 cost \$407.14
Long Distance	655 cost \$1,076.60	623 cost \$1,055.05	644 cost \$1,028.40
Teletypes	702	707	768

Contracts

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909

Negotiations of the definitive contract terms were concluded when the University accepted a fixed overhead allowance of \$350,000 for a four year period beginning April 2, 1956, with provision for adjustment should the construction require more time. The contract document, and supporting record, were sent to Headquarters for review and approval on January 18th.

The proposals for the 20 MEV linear electron accelerator, are still under review by Harvard which is seeking a change in the technical features of the proposal of the lowest bidder in order to take advantage of possible future developments in high power vacuum tubes.

Harvard allowed bids for the laboratory building substructure to lapse on January 30th because it was unwilling to break ground before the definitive contract was approved by the Commission. The Project Director now expects to issue bid invitations in mid-March for the overall laboratory building.

Members of the Divisions of Technical Liaison and Contracts visited the Area Office at Brookhaven to review cost control procedures used at the AOS project as background for similar controls for the Harvard and Princeton machines.

Massachusetts Institute of Technology

The Director of Contracts visited MIT's Office of Sponsored Research to discuss the master type contract requested by the Institute.

Material Loan Contracts

Contracts have been signed with the College of the City of New York, Yale, and the University of Maryland for loan of source material and neutron sources. The contract with NYU is still held up on a patents question; the contract with MIT is in final stages of preparation; that with Rensselaer Polytechnic Institute awaits some further information from the contractor. The contract with Pennsylvania State University for loan of the fuel loading for their reactor is still incomplete because of open questions on patents and reporting requirements.

New York University Computing Center, Contract AT(30-1)-1480

Approval was received from Headquarters on the preliminary proposal for modification and alteration of the building acquired by the University to house the AEC's IBM-704 computer, and to install the machine. The University was authorized on January 25th to proceed with alterations and modifications. June 1st is now the tentative installation date for the computer instead of March 15th as reported last month.

Nuclear Development Corporation of American, Contract AT(30-1)-862

The letter concerning overhead disallowances, mentioned last month, has been drafted in NYOO for mailing in the near future. The contract is being modified to add Process Heat Reactor and Shielding Studies for the Division of Reactor Development.

Nuclear Development Corporation of American, Chugach.

NYOO comments, drawn from Counsel, Budget and Finance, and Contracts, were sent to the Director of Reactor Development on January 25th.

Nuclear Metals, Inc., Contract AT(30-1)-1565

The final draft of the modification to sell the AEC equipment and permit Nuclear to use the Hood Building while it builds its own new laboratory was agreed to by the contractor. The document, with supporting justification, was then sent to Headquarters on January 14th for review and approval. Nuclear's request for a hold-harmless also was sent to Headquarters. During the month Nuclear made further progress in relocating parts of its activities from the Hood Building to another nearby government owned building.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238

A redraft of a modification for guaranteed amortization of the Matterhorn complex at the Forestal Research Center has been reviewed and the final document is being prepared.

A definitive extension of the contract has been prepared and sent to the contractor and to Washington for review and approval.

Proposals from architect-engineer firms for design of buildings related to the new site for the Model C program are being received. Princeton has submitted its proposal for the design of the device and buildings to house it and the associated power supply. These will be sent to Headquarters for information.

Princeton University, Accelerator Project, Contract AT(30-1)-1916

A discussion draft of the definitive contract will be sent to Princeton early in February.

Pursuant to the Accelerator Staff Paper, and arrangements made with the Division of Research, proposals for preliminary design of all components, detailed design of the injector system and magnet, and advance procurement of the Van de Graaff machine and magnet iron have been submitted to Headquarters for approval of the Director, Division of Research.

Sylvania Electric Products, Inc., Contract AT(30-1)GEN-366

Sylvania informally discussed with NYOO the possibility of reviving the plutonium laboratory, project work on which was stopped by NYOO following the thorium accident last July, and setting the project up at Brookhaven. NYOO is waiting for a more definite proposal. A meeting was held to discuss Sylvania's claim for reimbursement of costs resulting from the July accident. Tentative agreement was reached as to the division of costs between the Commission and the Insurance Carrier. These costs relate mainly to disposal of contaminated debris and equipment damaged beyond repair. Sylvania will submit a formal request shortly.

Inspection Division

As of the end of January, the Inspection Division had received for inspection, 692 licenses. Of these, 97 are source material licenses (10 CFR 40), and 595 are byproduct material licenses (10 CFR 30). In addition, one complaint case was received for investigation.

To date, 10 source material licensees and 60 byproduct material licensees have been inspected and the one complaint has been investigated.

The Director, Inspection Division, and representatives of the Inspection and Civilian Application Divisions, Washington, held formal meetings with representatives of the States of Connecticut and New Jersey. Informal meetings were held by a representative of the Civilian Application Division, Washington, and the NYOO Inspection staff with officials of the States of Massachusetts, New York and Pennsylvania. All of these meetings were for the general purpose of establishing liaison and a cooperative program with the states concerned.

Manager's Office

Dr. Robert Holmes, Director, Atomic Bomb Casualty Commission, Japan, visited Manager.

Dr. C. W. Shilling, Deputy Director, Division of Biology and Medicine visited NYOO to discuss Biology and Medicine organization plans.

Re Assignments
Modification No. 26
Supplemental Agreement to
Contract No. AT-30-1-GEN-366

Modification No. 16
Supplemental Agreement to
Contract No. AT(30-1)-1293

THIS SUPPLEMENTAL AGREEMENT, entered into as of April 1, 1957 (hereinafter referred to as "the effective date"), by and between Sylvania Electric Products Inc., a corporation duly organized and existing under the laws of the State of Massachusetts, with its principal offices in the City of New York, New York (hereinafter referred to as the "Transferor"); ~~The~~ Sylvania-Corning Nuclear Corporation, a corporation organized and existing under the laws of the State of Delaware, with its principal offices in the City of New York, New York (hereinafter referred to as the "Transferee"); and the United States of America (hereinafter referred to as the "Government"), acting through the United States Atomic Energy Commission;

WITNESSETH THAT:

WHEREAS, the Government, represented by various contracting officers of the United States Atomic Energy Commission, has entered into certain contracts with the Transferor, namely, Contract AT-30-1-GEN-366 and Contract AT(30-1)-1293, and the term "Contracts" as hereinafter used means the above contracts, including without limitation all amendments and supplements and change orders thereto, heretofore made by the Government, represented by various contracting officers of the United States Atomic Energy Commission, or by Sponsors, as defined in said contracts, and the Transferor (whether or not performance and payment have been completed and releases executed, if the Government, Sponsor, or Transferor has any remaining rights, duties or obligations thereto), and including amendments, supplements and change orders thereto hereafter made between the Government and the Transferee, or the Sponsor and the Transferee;

WHEREAS, as of the effective date, the Transferor has assigned, conveyed and transferred to the Transferee all of the property described in Exhibit "A" attached hereto as a part hereof;

WHEREAS, the Transferee, by virtue of said assignment, conveyance and transfer, has acquired all the assets and liabilities of the Transferor relating to the performance of the Contracts;

WHEREAS, by virtue of said assignment, conveyance and transfer, the Transferee has assumed all the duties, obligations and liabilities of the Transferor under the Contracts;

WHEREAS, the Transferee is in a position fully to perform the Contracts, and such duties and obligations as may exist under the Contracts;

WHEREAS, it is consistent with the Government's interest to recognize the Transferee as the successor party to the Contracts; and

WHEREAS, there has been filed with the Government, through the Savannah River Operations Office of the Atomic Energy Commission, evidence of said assignment, conveyance and transfer, as is more fully described in Exhibit "B", which is attached hereto as a part hereof;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and undertakings contained herein, the parties hereto agree as follows:

1. The Transferor hereby confirms said assignment, conveyance and transfer to the Transferee as of the effective date, and does hereby for itself alone, release and discharge the Government from, and does hereby waive any claims, demands, and rights against the Government and/or Sponsor(s), as defined in the Contracts, which it has as of the effective date or may thereafter have under, or in connection with, the Contracts; provided, however, that nothing in this paragraph 1 shall be deemed to preclude the Transferee from exercising, making and/or enforcing, on and after the effective date, any of such claims, demands or rights which the Transferor would have been entitled to exercise, make and/or enforce but for the provisions of this paragraph 1.

2. The Transferee hereby assumes, agrees to be bound by, and undertakes to perform each and every one of the terms, covenants, and conditions contained in the Contracts. The Transferee further assumes all obligations and liabilities of, and all claims and demands against, the Transferor under the Contracts, in all respects as if the Transferee were the original party to the Contracts.

5-C
S-C
—
3. The Transferee hereby ratifies and confirms all actions heretofore taken by the Transferor with respect to the Contracts with the same force and effect as if the action had been taken by the Transferee.

4. The Government hereby recognizes the Transferee as the Transferor's successor in interest in and to the Contracts. The Transferee hereby becomes entitled to all right, title and interest of the Transferor in and to the Contracts

in all respects, including without limitation all claims, demands and rights thereunder or in connection therewith, as if the Transferee were the original party to the Contracts. The term "Contractor" as used in the Contracts shall be deemed to refer to the Transferee rather than the Transferor.

5. Nothing in this agreement shall be construed as a waiver of any rights of the Government or the Sponsor(s), in case of a sponsor agreement, against the Transferor in connection with the Contracts ~~in effect prior to the effective date of this agreement~~ *in and prior to the eff date*.

6. Notwithstanding the foregoing provisions, all payments and reimbursements heretofore made by the Government or the Sponsor(s), in case of a sponsor agreement, to the Transferor and all other action heretofore taken by the Government, pursuant to its obligations under any of the Contracts, shall be deemed to have discharged pro tanto the Government's or, as the case may be, the Sponsor's obligations under the Contracts. All payments and reimbursements made by the Government or the Sponsor, in the case of a sponsor agreement, on or after the effective date of this agreement in the name of or to the Transferor shall have the same force and effect as if made to said Transferee and shall constitute a complete discharge of the Government's or, in the case of a sponsor agreement, the Sponsor's obligation under the Contracts to the extent of the amounts so paid and reimbursed.

7. The Transferor and Transferee hereby agree that no claim for payment by, or reimbursement from, the Government shall be made by either or both of them with respect to any costs, increased taxes or other expenses arising directly out of or attributable directly to (i) said assignment, conveyance, and transfer, or (ii) this agreement, other than those which the Government, or the Sponsor, in the case of a sponsor agreement, would have been obligated to pay or reimburse under the terms of the Contracts in effect prior to the effective date of this agreement.

8. The Transferor hereby unconditionally and irrevocably guarantees payment of all liabilities and the performance of all obligations which the Transferee assumes under this agreement, or may hereafter undertake under the Contracts; provided, however, that this guarantee shall not apply with respect to ~~any contract term or period of performance subsequent to~~ March 31, 1959; provided further that the Transferor hereby irrevocably waives notice of any and all intervening amendments, supplements and/or change orders to the Contracts or either of them.

Wiley...
to be performed
per
3/31/59

9. Except as herein modified, the Contracts shall remain in full force and effect.

IN WITNESS WHEREOF, each of the parties hereto have executed this Supplemental Agreement as of the date and year first above written.

UNITED STATES OF AMERICA
By: UNITED STATES ATOMIC ENERGY COMMISSION

Title: _____
(Representing Contract No. AT-30-1-GEN-366)

Title: _____
(Representing Contract No. AT(30-1)-1293)

WITNESSES:

SYLVANIA ELECTRIC PRODUCTS INC.

By: _____

Title: _____

SYLVANIA-CORNING NUCLEAR CORPORATION

By: _____

Title: _____

CERTIFICATE

I, _____, certify that I am Secretary of Sylvania Electric Products Inc., named above; that _____, who signed this agreement on behalf of said corporation, was then _____ of said corporation; and that this agreement was duly signed for

and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

Witness my hand and seal of said corporation this _____ day of _____, 1957.

(Corporate Seal)

CERTIFICATE

I, _____, certify that I am Secretary of Sylvania-Corning Nuclear Corporation, named above; that _____, who signed this agreement on behalf of said corporation, was then _____ of said corporation; and that this agreement was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

Witness my hand and seal of said corporation this _____ day of _____, 1957.

(Corporate Seal)

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT
FOR THE MONTH OF
APRIL 1957

Prepared by the Staff of the New York Operations Office
May 31, 1957

USDOE 001169

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

APRIL 1957

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USDOE 001170

SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Office Management

A visit was made to the Princeton Security Office to inspect changes in the building necessary to maintenance of security without a guard force. Arrangements were made with the General Services Administration to accomplish this work.

Procurement

The annual appraisal of procurement and traffic at Nuclear Metals, Inc. was conducted during the week of April 22 for fiscal year 1957 activities.

While in Boston, the Chief of the Procurement and Traffic Branch also met with the Business Manager and Purchasing Agent of the Cambridge Electron Accelerator to discuss developments in the purchasing program for this project.

Property

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for the disposal of contaminated wastes as follows:

Chicago Operations Office

Westinghouse Electric Corp.(Pittsburgh, Pa.) 229.273 tons

Nuclear Metals, Inc.

Contract 1565 14.9875

Visits were made to Princeton University Contract AT(30-1)-1238 re acquisition of excess property.

A Property Management Appraisal was conducted of Sylvania Corning Nuclear Company Contract AT(30-1)-461.

Contracts

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909

After review of Headquarter's comments on the proposed definitive contract for design and construction of the 6 BEV electron accelerator at Cambridge, NYOO met with Harvard representatives on April 9th, and negotiated for a number of changes. Harvard accepted NYOO proposed changes on April 26th. The revised contract and supporting justification was sent to Headquarters on the same day. NYOO recommended approval as submitted. Harvard has continued firm in its position to invite no bids for construction until the contract has been approved.

NYOO received a qualified approval from the Director of Research on Harvard's proposals to proceed with detailed design of all buildings, except the laboratory structure which had been approved earlier, and the detailed design of the machine itself. Some additional information is needed from Harvard before the formal approval can be given.

Harvard has requested authority to purchase several major items for the construction phase of the buildings. The Director of Research approved these procurements but suggested that NYOO withhold approval until acceptance of the contract terms seemed sure. Following Harvard's agreement to the revised final terms on April 26th, NYOO authorized the advance procurement of three cranes and an electrical substation.

Harvard was represented by the CEA Project Director at the Conference on Shielding of High Energy Accelerators. Following the meeting, the Project Director increased earth shielding at one side of the experimental building and over the magnet tunnel.

Material Loan Contracts

Negotiations with New York University, (for loan of the fuel loading for its subcritical assembly) and with Pennsylvania State University (for the fuel loading of its reactor) continue suspended pending outcome of Commission action on a proposed staff paper to deal with revised terms for such loans.

New York University Computing Center Contract AT(30-1)-1480

Renovation of the University furnished building for the IBM computer are in progress and should allow installation in June. The laboratory space for AEC use on the eighth floor has been revised, following the decision of the Director of Research to provide space there for Project Sherwood work. The University's subcontractor for the building modifications has submitted a revised cost estimate which is being reviewed by NYU for submission to NYOO.

Nuclear Development Corporation of America Contract AT(30-1)-862

NYOO and NDCA met on April 4th to discuss our position on allowable overhead costs. NYOO's position is before NYOO Contract Review Board.

Nuclear Metals, Inc., Contract AT(30-1)-1565

NMI met with NYOO on April 5th to discuss final changes to modification of the contract to sell Nuclear the AEC equipment there, and permit them use of the present buildings for private purposes. Nuclear reserved decision, and about a week later informed NYOO that the Board of Directors decided against any further changes in agreements reached in good faith after long negotiation. NYOO Acting Manager refused to recommend Washington approval unless the more important changes developed by Washington review were given substantial effect. Agreement was reached on this basis. The final modification has now been recommended to the Director of Biology and Medicine as in the best interests of the Government.

Partial relocation of personnel and activities from the Hood Building to space at 224 Albany Street in Cambridge is nearly complete. Decision on repairs to second and third floor of Hood Building awaits more information from Nuclear.

Princeton University, Project Matterhorn Contract AT(30-1)-1238

The definitive modification to the contract that extended the term, added funds, and provided for financial plans, was approved by Headquarters and signed during the month.

Negotiations were begun and completed with the Walter Kidde Constructors, Inc., who were chosen as the architect-engineer for site preparation and buildings not associated with the device. All reviews of the sub-contract negotiations are completed, and an interim authorization was issued to the University. The work involves preliminary services, design services and supervision of construction for approximately 53,000 square feet of usable space for laboratories, offices, cafeteria, warehouse, and shops, plus the development of utilities. A master plan, plot and utilities for the ultimate project needs of approximately 700,000 square feet of various buildings on a 62 acre site will also be developed.

The Project overhead remains a problem. The issues involve the part of the University's overhead costs which should be passed on to the Forrestal Research Center, where the work of this contract is progressing. A provisional overhead rate has been established. The fixing of actual overhead rates for 1954 and 1955 must await the completion of a General Accounting Office audit of the University now in progress.

Princeton University, Accelerator Project Contract AT(30-1)-1916

Discussions on the definitive draft continued, but negotiations with Harvard, Nuclear Metals and Princeton-Matterhorn had priority. A concentrated effort can probably be made during May to conclude these negotiations. Project personnel attended the Shielding Conference on High Energy Accelerators.

Radio Corporation of America Contract AT(30-1)-1958

Negotiations have been completed and the definitive draft is in preparation.

University of Rochester, Cyclotron Project Contract AT(30-1)-875

Bids for additional laboratory space for the cyclotron project were opened on April 16th. The low bid of \$80,285 was accepted. A staff review of overhead for the calendar years 1954, 1955 and 1956 was completed and will serve as a basis for setting final contract rates for these periods.

Sylvania Corning Nuclear Corporation Contract AT(30-1)-GEN-366

SCNC's proposal to set up a small plutonium laboratory at Brookhaven is still under review there. The assignment of this contract from Sylvania to the new corporation was accomplished.

Inspection Division

During April, one hundred sixty-two CFR 30 (Byproduct Material) licenses, and thirty-seven 10 CFR 40 (Source Material) licenses were received for inspection. This makes 1,041 Byproduct Material licenses and 197 Source Material licenses - a total of 1,238.

Sixteen Byproduct Material licenses and two Source Material licenses were investigated.

Manager's Office

Mr. Marcelino E. Calinawan, an Eisenhower Exchange Fellow from the Philippines, and Vice-Chairman of the Interdepartmental Committee on Atomic Energy (Philippines) spent the week of April 8th in New York.

Two days were spent at NYOO devoted to contracting, public relations, and problems of health and safety. The remaining three days were used for visits to Universities and other non-profit research institutions in the area. These included Columbia University, New York University, Cornell Medical School, Sloan Kettering Institute for Cancer Research, and the Columbia-ONR Cyclotron at Nevis on the Hudson.

A task force on university research contracting, invited by Dr. T. H. Johnson, Director, Division of Research, met in NYOO on April 3rd.

On April 25th and 26th a Committee established by Mr. A. Tammaro met in NYOO to formulate recommendations concerning the relocation of NYOO and HASL.

Personnel

Federal Personnel Statistics

During the month the following personnel activities took place:

- 45 interviews with prospective candidates
- 17 screening, preliminary or courtesy interviews
- 15 interviews with candidates and operating officials
- 5 job evaluations completed
- 6 selections of candidates
- 4 persons entered on duty

April 5th a member of the O & P staff participated as chairman of a workshop on the problems of recruiting engineers and scientists; which was sponsored by the Second U. S. Civil Service Region.

On April 24th members of the O & P staff met with representatives of Walter Kidde Constructors, Inc. to review and discuss the company's personnel policies and insurance arrangements as applicable to the proposed Princeton A-E subcontract.

A representative of the O & P Division visited the New York University Computing Facility and the Sylvania-Corning Bayside Facility on industrial relations matters in connection with Contracts AT(30-1)-1480 and AT(30-1)-GEN-366.

Public Information

Considerable time was spent in cooperation with Brookhaven National Laboratory and the Division of Information Services, Washington in planning press coverage for the Inter-American Symposium on the Peaceful Uses of Nuclear Energy to be held at Brookhaven.

Public Information assisted Brooklyn Public Library and Abraham and Strauss in final plans for the Atomic Energy Exhibit held at the store and the Library, and also arranged for two speakers for Library events held in conjunction with the exhibit.

The Director, Public Information and HASL representatives worked with high school teachers during the week of April 22nd to develop and annotate experiments for the purpose of updating the publication "Laboratory Experiments with Radioisotopes for High School Science Demonstrations."

At the request of the Division of Information Services, Washington, the Director, Public Information escorted Norwegian reporter, Trygve Ramberg to Brookhaven National Laboratory.

Considerable time was spent in helping two free lance reporters research and authenticate stories for national publications. They were Paul Jacobs of The Reporter Magazine and John Lear of The Saturday Review of Literature.

Routine press and general public requests for films was higher than usual. The film library of Public Information made available 372 films which were shown to approximately 16,500 people. This was a substantial increase over other monthly figures.

Security

During April, 195 clearances for access to secret data and 107 for access to confidential data were granted. Requests for 126 secret and 193 confidential clearances were received for processing in the same period.

Technical Liaison

Access Permit Program

During April, 16 new access permits were assigned to NYOO. Eleven have access to Secret Restricted Data. There was one amendment to include Secret Restricted Data. One access permit assigned to NYOO was reassigned from the Division of Civilian Application in Washington. Two access permits were terminated. This brings total number of NYOO access permits to 420 - 219 have access to Secret Restricted Data, and 201 have access to Confidential Restricted Data.

Accountability

Second transfer of SS nuclear material between U.S.A. and the Netherlands was accomplished with NYOO representation. Fabrication of fuel elements for BNL reactor started at Sylvania, Hicksville.

Construction and Engineering Branch

1. Attendance at Staff Conferences of the Cambridge Electron Accelerator Project.
2. Visits to the offices of Chas. T. Main, Inc., Boston, Mass. and Gibbs and Hill, New York, N. Y. for the purpose of reviewing architect-engineer being furnished by these firms in connection with the Cambridge Electron Accelerator and Princeton Proton Accelerator.
3. Participation in negotiations with Walter Kidde Constructors prior to the commencement of A/E design work on the Model "C" site development.
4. Visit to Rochester University for the purpose of attending the bid opening for the construction contract for additional space for the large cyclotron laboratory.
5. Computer Installation visits to 4-6 Washington Place to determine progress of construction of IBM-704.
- 6 Visits to Nuclear Metals, Inc. to discuss moving equipment and personnel from Hood Building to 224 Albany Street, Cambridge, Mass.

HEALTH AND SAFETY LABORATORY

Environmental Health Services

Health Protection Study Committee

A report has been prepared by the Chief of the Industrial Hygiene Branch covering visits which were made by a specially appointed Health Protection Study Committee to the Portsmouth and Paducah Gaseous Diffusion Plants. This report has been submitted to Mr. Sapirie at whose request the study committee was assembled.

Detailed recommendations are presented with the report. The primary emphasis of these recommendations is to point out the differences between health practices and procedures at the two plants and the inconsistencies which exist, and to advise the Commission that there be considerable standardization in health procedures from plant to plant.

As a consequence of these investigations, discussions have been held with Dr. Western and Dr. Beard of the Division of Biology and Medicine on the advisability of convening a symposium on the subject of health practices in uranium handling. Such a symposium will be probably called sometime in November; the result of which should be a set of standard recommended health procedures to be published by the Commission.

Uranium Mill Surveys Study

A meeting was held in Washington with the Division of Civilian Application, Inspection, Raw Materials, and Biology and Medicine. The meeting was called by L. D. Low of the Inspection Division for the purpose of coordinating ideas on health surveys in uranium concentrating mills.

No final conclusions were reached, but some responsibilities and desires were clarified. Another meeting will be called in the near future to bring the matter to a final conclusion.

Sea Disposal of Wastes

A meeting called by Lester Rogers of the Division of Civilian Application in Washington was held with various operating branches of the Navy Department on the subject of sea disposal of wastes. Major purpose was to begin the establishment of uniform procedures for packaging, handling and reporting waste materials disposal between the Navy and the AEC. Since HASL is the only group in the country which is following a consistent procedure of reporting sea disposal, the packaging procedures and the reporting forms which are used by this office were presented to the group. It was suggested that the form adopted should be drawn in such a way that the information can readily be transferred to a business machine card.

Nuclear Metals, Inc.

A visit was made to NMI to establish pre-occupancy radiation levels at the 224 Albany Street Building. Some of the areas are already processing uranium, and as a result background was found to be somewhat elevated. However, no significant activity was measured.

Sylvania-Corning Nuclear Corporation

A visit was made to Sylvania-Corning to observe the disposal of a drum of thorium powder. The powder was slurried and pumped into a 15 foot deep hole without incident.

Safety Activities

The NYOO Health and Safety activities report for the first quarter of 1957 was submitted to Washington. The report covered safety visits to NMI, Sylvania Electric, Princeton University, and NYOO during this period. Consultation was provided to some other contractors.

Analytical Support for Field Surveys

<u>SUMMARY</u>	<u>RECEIVED</u>	<u>RUN</u>	<u>BACKLOG</u>	
			<u>This Month</u>	<u>Last Month</u>
Uranium				
Air Dust	22	22	0	0
Urinary	149	200	96	147
Misc	21	31	21	31
Beryllium				
Air Dust	75	278	64	267*
Misc	0	0	50	50.
Radium				
Urinary	6	9	10	13
Misc	6	6	0	0
Fluoride	0	0	97	97
Misc	1	1	0	0
U-235-Urine	0	0	12	12
U-233-Urine	<u>0</u>	<u>0</u>	<u>3</u>	<u>3</u>
TOTALS	280	547	353	620*

*A physical re-check on the backlog of Be Air Dust Samples was completed and revealed 5 additional samples that were not accounted for at the end of March 1957.

Weapons Effects

Plumbbob

HASL participation in Program 32.1 in connection with Plumbbob series has suffered many serious changes. However, it is still planned that the program

will go forward with minor modifications. The program has no chance of providing the data originally desired because of changes in the weapon design and placement. In addition, the present best estimate is that even the limited data which might be achieved have about a 20% chance for success. This has been made abundantly clear to the Civil Effects Test Group, but it has been agreed with them that it is preferable to proceed even with this limited objective than to withdraw this very important program.

The Instruments Branch has completed negotiations with the Jordan Electronics, Inc. for the equipment required for this program. The contract has been written to assure delivery in time for the shot.

Program 32.2 - Aerial Survey Equipment - The unit consisting of a head and a separate control box is practically completed; the unit which contains both the detector and the control is completed, calibrated and is undergoing temperature runs.

Monitoring Equipment for loan of Program 30 - Circumstances beyond control of this office created delays in delivery by the shippers of the units destined for Program 30. The lost shipment has been located and forwarded via air express. It is in Mercury and a member of the Instruments Branch staff is at NTS preparing these units for use by unpacking them and taking check calibrations and to assure that in-transit damage is rectified.

The Chief, Analytical Branch, at the request of the Department of State, attended the Third Session of the U.N. Scientific Committee on the Effects of Atomic Radiation in Geneva, Switzerland, as an advisor, during the period April 5 through 21.

The Assistant Chief, Analytical Branch, attended a meeting at DBM, Washington, on April 30, to discuss stratospheric sampling.

7,560 fallout samples were processed during the period April 1 through April 30, 1957.

Fundamental Studies

During the week of April 1, three members of the Radiation Branch were joined by Dr. John Gentry in making radiation measurements in various upstate New York regions. These data combined with other measurements made in the New York City area, have been prepared in the form of a brief report to be submitted to SCIENCE with the request that they be published concurrently with the proposed report of congenital malformations by Dr. John Gentry.

Consultation and Educational Services

Conference on Shielding and High-energy Accelerators

A conference on shielding and high-energy accelerators sponsored jointly by the Division of Research and the Radiation Branch of the Health and

Safety Laboratory was held April 13 through April 15, 1957 in New York. The meeting was attended by approximately 75 scientists and engineers from the major accelerator sites in the United States. A preliminary report of approximately 360 pages has already been prepared and distributed to the authors for comment prior to final publication.

High School Teachers

As arranged by the Assistant to the Manager for Public Information, and under the supervision of the Acting Chief of the Analytical Branch, six high school science teachers conducted experiments with radioisotopes at HASL during the week of April 22 to update the publication, "Laboratory Experiments with Radioisotopes for High School Science Demonstrations."

Isotopes Training Program

The Chief of the Radiation Branch participated in an isotopes training program under the sponsorship of the New York City Department of Hospitals at the Queens General Hospital.

NYU Physics Colloquium

The Assistant Chief of the Radiation Branch presented a talk on the subject of "Personnel Protection for Installations Using Sources of Radiations" at the NYU Physics Colloquium on April 5.

Industrial Health Conference

A number of staff members of the Health and Safety Laboratory attended the American Industrial Hygiene Association meeting in St. Louis, April 22 - 26, and plants of the Mallinckrodt Chemical Works. The following papers were presented:

"A Survey of Radiation Hazards at 36 Accelerators of Different Types," James E. McLaughlin, Jr.

"A System of Film-Badge Interpretation," Keran O'Brien, Leonard R. Solon, Hanson Blatz (Presented by Wayne M. Lowder)

"Gonadal Dose in Roentgen Examinations," Hanson Blatz

"Industrial Hygiene of Beryllium Plant Design and Operation," A. J. Breslin and W. B. Harris

"Nuclear Safety Considerations in the Processing of Fissionable Materials," W. B. Harris and Leonard R. Solon

"The Industrial Hygiene of Uranium Fabrication," W. B. Harris and Irving Kingsley (NY State Dept. of Labor)

"Variations in Ambient Radon Background Concentrations," H. Glauberman, A. J. Breslin, and W. B. Harris

"Fallout Monitoring," John H. Harley

Training of Foreign Scientists

The training period for U.S. and foreign scientists in radio-chemical procedures continued throughout the month of April. At the request of the Chief, Analytical Branch, the Chief, Radiation Branch addressed the students on AEC coding regulations on April 9, and the Director, Inspection Division, addressed them on the AEC civilian application program and AEC inspection regulations on April 10.

Publication

Report NYO-4889, A Study of Fallout in Rain Collections March Through July, 1956, by William R. Collins, jr., and Naomi A. Hallden was prepared on April 30.

Technical Consultation in Industrial Hygiene

Dr. Anna Baetjer, Johns Hopkins University	Specifications for handling beryllium materials.
L. B. Leppard, Department of Health, Toronto, Ontario	Radon detection in mines
G.N. Howatt, Galton Industries	Use of thoria in ceramics operations.
T.W. Fluhr, NYC Board of Water Supply	Geologic and Hydrologic effects of waste disposal
Mr. Collins, American Machine and Foundry	Maximum permissible levels

Instrumentation

DTR System

One unit has been placed on the line and is now making repetitive counts on six samples. By this means, approximately 8 to 10 counts are made per day per sample. No major failure problems have been encountered in the system. The troubleshooting work has been rigorous, and modifications of inter-connecting wiring is approximately all that is needed to assure proper operations. Some delay still exists in delivery of components but it is expected that near the end of May the tape counting equipment will be checked out and will be ready for use by the Analytical Laboratory.

Radon Equipment for DTR

A transistorized preamplifier has been constructed and thoroughly tested. It is far superior to any vacuum tube design previously made here for the pulsed ion chamber; and, in fact, provides 80 to 100 to one signal to noise ratio in contrast with the 30 to 35 to one previously obtained as an optimum. Further circuit design will permit full transistorization of the system.

Mercury Vapor Detector

The past month has been spent in modifying the circuit which operated very well for wide environmental changes. Since the unit is to be used in a plant operation 120° to 130°F is essential as well as operation down to 0°F. The unit is stable except for temperature and has now been stabilized from approximately 120° down to 50°F. Extension of the range below this temperature is feasible.

Strontium-90 Counting Equipment

Libby Proportional Counter - This system has been placed into operation but has an unreasonably high background. A careful investigation is to be made into the circuitry to determine what can be done to assure stability in the anti-coincidence array, and the elimination of sensitive adjustment procedures reported by other users.

Geiger Tube Counting Equipment for Strontium 90 - Additional metal window geiger tubes have been received, and although they have not as low background as the first model, they all range at 1 second per minute background with high geometry for K-40. The equipment is still giving trouble due to drift in the univibrator circuits, but this problem can be solved by some circuit changes of minor nature. Because of the interaction of the anti-coincidence circuitry new circuits will be designed to eliminate these problems.

Nuclear Safety

The following feasibility reports were reviewed and approved by the Nuclear Safety Review Board:

Supplement No. 5 to Feasibility Rpt. No. 36 (Sponsored Task C-36)

Feasibility Rpt. for Fabrication of Coextruded Enriched Uranium Aluminum Alloy Tubes for Westinghouse (NMI-FR-7)

Modification of Feasibility Report NMI-FR-6 for Fabrication of Enriched Uranium-Molybdenum Alloy Pin Stock for Atomic Power Development Associates (NMI-FR-6B)

Visitors to the Health and Safety Laboratory

<u>Date</u>	<u>Name of Visitor</u>	<u>Visited</u>	<u>Subject of Discussion</u>
4/1	Dr. Dan Benaisan, UN Scientific Committee on Effects of Atomic Radiation	Harley	Fallout collections
	Dr. Wolfgang Eichler, Agfa Film Co., West Germany	Harley	Effects of fallout on film
4/2	Mr. I.W. Ruderman, Isomet Corp. LeVine		Scintillation Phosphors

4/3	J. E. Foreshew, Div. of Construction, Washington	Lough	Tour of HASL to note space requirements
	H.C. Brown, Div. of B&M, Washington	Lough	HASL move
4/9	Marcelino E. Calinawan (Eisenhower fellow from Phillippines) Vice-Chairman, Interdepartmental Commission of Atomic Energy Philippines	Lough	HASL tour and lecture session
	Dr. Tabershaw, Nuclear Development of America	Harris	Health and safety problems at NDA
4/12	Dr. Koven, Beryllium Corp.	Harris	Out-plant sampling at Hazelton, Pa.
4/15	Mr. Vincegurra, State University, Kings County Hospital	Lough	Setup of isotopes lab at the State University
	Claude Sill, Idaho Operations	Whitney, Alercio	Visit HASL, discuss analytical methods
4/16	Wade Jones, UCRL	Whitney	Analytical methods
4/17, 4/18	Paul Zigman, NRDL	LeVine	Laboratory instrumentation
4/17	Dr. Constantine Maletskos Reactor (MIT)	Radiation	Radiation monitoring and surveying
4/25	Br. William Bernard, Mt. St. Michael Academy, Br. Julian Ernest, Mt. St. Michael Academy, Mrs. Paul Wilfred and Linus Richard of St. Anne's Academy, Br. Paschall Emile of St. Mary's Academy, and Br. Michael Urban of St. Helena's Academy	Whitney	Tour of Health and Safety Laboratory
4/26	Drs. I.T. Alexander and F. Dever, Soil Survey Center, USDA, Beltsville, Md.	Harley Hardy	Samples collected for HASL by USDA
4/29	Dr. Chapman, Dow Chemical Corp.	Harris	Beryllium operations
4/29,	Drs. Flo Ward and Benjamin Bruckner, Walter Reed Army Research Center	Harley Hardy, Welford, Baxter	Strontium analysis problems

4/29

George Anton, Div. of B&M,
Washington

Whitney,
LeVine

Analytical methods,
instrumentation

R. Brehm and H. Beam,
Jarrala-Forster Cc.

Alercio

Beryllium fluorimeter
loaned to HASL

SECTION II

BROOKHAVEN NATIONAL LABORATORY MONTHLY STATUS AND PROGRESS REPORT FOR APRIL 1957

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

During the month, four proposals were received for the magnet cores and five proposals were received for the fabrication of the magnet's coils. These are now being evaluated.

On the magnet enclosure, approximately 750 running feet were completed, nine special concrete pile caps were placed, steam distribution piping was received and installation started.

On the Target Building, the steel roof deck, shielding foundation excavation and forming were completed.

Linac Building - The roof deck was completed and 70% of the siding installed. Three thousand feet of 12" diameter cooling water line was installed and is now under test. Invitations were issued for the cooling water recharge basin and a contract was awarded for drilling of the three wells to supply water for machine cooling. The Laboratory awarded a contract to Precast Building Sections, Inc. of New York City, for the high density shielding blocks.

18" Cyclotron Building

Title I work was completed to the extent that a Title I Report for review was submitted to the AEC on April 23, 1957. At month's end, review had been virtually completed and the contractor instructed to make necessary revisions to the Title I Report before proceeding with Title II work.

Reclamation and Hot Laundry Facility

Preliminary drawings for this facility were presented for review by Jenks & Ballou at month's end.

Engineering Works Area

This job is now 83% complete. During the month the contractor completed the waylite block partitions, roof cant strips, rolling steel doors and the sub-station slab. The installation of the sub-station, heating units, fixtures and concrete curbs were started. The installation of aluminum wall panels, steam and condensate piping, plumbing and electrical work were continued inside the building.

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Medical Research Center

This job is now 28% complete. During the month the main laboratory floor slab was completed. The concrete walls for the high and low level counting rooms were poured. Formwork for the hot therapy room, Reactor foundations, the Reactor-Laboratory connecting wing and the emergency operating room were continued.

The erection of structural steel was continued in the laboratory sector. The roofing contractor started installing roof purlins in the hospital sector. The brick contractor has substantially completed the exterior of the hospital sector and this work has now been slowed pending further erection of structural steel. Some interior partition work was started in the hospital sector.

The installation of underground and exposed utilities was continued in the hospital sector. The installation of utilities in the laboratory basement and outside underground were continued.

The Daystrom Company continued fabricating and testing Reactor components and instrumentation. Delivery of some components was about to start at the end of the month.

Liquid Metal Fuel Reactor Experiment
(Babcock & Wilcox Co.)

Reactor design #8, which incorporates an integral core and core tank, has been completed. Work is now progressing on preliminary details and specifications, for a quadrant type core and side reflector. Sodium has been selected as an intermediate fluid. Evaluations of the design were made as to safety, physical characteristics, handling problems, and related costs. Work is also progressing on the plant arrangement, component arrangement, the handling system, and plant shielding design.

The necessary materials and equipment for four high velocity test loops has been ordered. Preliminary design for the out-of-pile loop is proceeding, with final design on many of the components initiated. Space allocation is being developed with MTR and ETR for possible installation of in-pile radiation loops. Preliminary tests have been conducted which indicate the capsule test specimens will give measurable mass transports.

A study of the change in critical concentration and critical diameter with small changes in the physical and nuclear parameters of the reference design has been completed. The criticality calculations were checked against critical experimental data on high energy uranium-graphite systems. A series of calculations of the effect of various blankets and reflectors-blankets components on the critical size-density, and conversion ratio of the LMFRE has also been made.

Cosmotron

The repair of the Cosmotron is progressing satisfactorily. The copper conductor bars have been replaced in the damaged quadrant, and in the other

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quadrants the conductor bars have been tightened by the installation of the new "kicker" bars. The assembly of the entire machine is now underway.

Several modifications have been made to improve the reliability and usefulness of the Cosmotron. End connections on the pole face windings have been altered to correct a condition in which these connectors frequently worked loose during pulsing causing a loss of the beam. A second exit port for an external proton beam has been machined in quadrant two. This second external beam will be used to produce high energy π^+ and π^- beams. A new pulsing circuit for the deflecting magnet of these external beams has been constructed to permit one portion of a single pulse of the internally circulating protons to be directed out of one exit port and then another portion out of the other port. This will permit experiments to be performed simultaneously with both external beams.

Test borings made of the sand beneath the floor of the Cosmotron have shown that this sand will not support the heavy shielding being planned. Consequently, the region under the shield will be grouted by forcing a cementing liquid under pressure into the sand, the resulting mixture then hardening into a solid mass.

Operation of the Cosmotron for test purposes is now scheduled for the first week in June.

60" Cyclotron

During the past month difficulty developed with the magnet cooling of the 60" Cyclotron. The aluminum coils have, from time to time, shown evidence of corrosion. The attempts made to eliminate this by means of a water purification system have not proved adequate. Apparently, a pinhole leak occurred inside the magnet coil. This introduced enough water into the coil so that considerable corrosion, aided by the potential difference across the magnet coil, took place on the outside of the conductors, resulting in several larger leaks. All of these leaks appear to be at the ends of the conductors. The conductors at the outside of the coil have been repaired but the conductors on the inside of the coil are inaccessible without extensive disassembly of the magnet. The water cooling on one of the 10 pie windings which leaked at the inside has been cut off. This pie is adequately cooled by adjacent windings.

In the meantime, the Laboratory has been advised that the use of sodium chromate at a controlled pH will stop any further corrosion. Bench tests over 3 weeks with thin aluminum foil confirm this. (Corrosion can be demonstrated in tap water in one day). Sodium chromate is being added to the magnet cooling water and it is expected that there will be no further trouble of this sort. Attempts will be made to repair the winding that leaks without disassembly. Since the cooling of the magnet coil was overdesigned, further reduction of the number of windings cooled is possible without adversely affecting the operation of the machine.

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Contract Actions

The AEC continued negotiations with AUI for renewal of the AUI prime contract, which expires on June 30, 1957. During the month there was one meeting with the Contractor and a meeting of the Contract Board. As a result of these meetings, a draft contract will be prepared.

Negotiations continued between Babcock & Wilcox and their subcontractor, Union Carbide & Carbon Corporation. Indications are that negotiations will lead to U.C. & C.C. acting as consultants to the B&W Company on the LMFRE.

The approved Financial Plan--Mid-Year Review was received and forwarded to AUI. The approved Financial Plan seems to be adequate except for the Biology & Medicine program. This program is going forward at a rate in excess of the cost ceiling, and the Area Office has requested the Contractor to furnish their best estimate of FY 1957 costs for this program. This might result in a request for a change in the Financial Plan.

Research Reports

During this period, 32 papers were approved for publication. This number included 13 on physical sciences, 3 on applied sciences, and 16 on life sciences.

Visitors

The Laboratory was visited by the following, among others:

8 engineers from Argentina, on April 1.

Trygve F. Ramberg, a science writer on the staff of Aftenposten, Oslo, Norway, on April 1.

Herbert De Laboulaye, Technical Consultant to Preparatory Committee, IAEA.

Peter Graf, representative of Reaktor AG, Switzerland.

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DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

MAY 1957

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Property

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for the disposal at sea of contaminated wastes as follows:

Chicago Operations Office:

(Westinghouse Electric Corporation - Pittsburgh, Pa.) 407.255 tons

Sylvania Corning Nuclear Corporation

Contract AT-30-1 Gen-366 2.2 tons

Bendix Aviation Corporation

Contract AT-30-1 Gen-1059 2.25 tons

Visits were made to Harvard University, Contract 1909, regarding acquisition of machine tools, etc., from excess.

A visit was also made to the Boston Navy Yard with representatives of Harvard University, Contract 1909, to arrange for possible assistance from the Navy in precision work for the Magnet.

A representative of Administrative Operations and a representative of Princeton University (Contract 1238) visited The RCA Corporation, Lancaster, Pennsylvania, regarding acquisition of Capacitors, etc., excess to the Navy Contract with RCA.

Property management appraisal was made of the Sylvania Corning Nuclear Corporation Contract 366.

Records Management

The Records Officer and the Director of Administrative Operations Division attended the annual Records Management Meeting in Washington.

A visit was made to the Brookhaven Area Office in order to review the NYOO vital records stored at the ERC.

A records management appraisal was made at Nuclear Metals, Inc.

Contracts

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909

Final changes were made in the definitive contract and Headquarters' approval obtained. On May 2nd, the Project requested authority to proceed with construction of the laboratory-control building. The cost estimate is:

Advanced procurement of items such as steel, air conditioning.....	\$ 75,000.00
Construction subcontract	325,000.00
CEA project costs.....	5,000.00
Architect-Engineer costs.....	<u>20,000.00</u>
TOTAL	\$425,000.00

Harvard was informed of Commission approval on May 23rd and agreed to issue invitations for bids to construct the laboratory-control building. The bids are returnable by June 21st. Invitations were sent to eight qualified Boston-Cambridge firms; two others have requested invitations and will receive them; the invitation also will be announced in Dodge Reports. Washington-Research approval also will be required.

The project also has requested authority to order structural steel for the experimental area and the magnet tunnel in advance of general construction authorization. This has been referred to Headquarters-Research for approval. As a result of the shielding conference mentioned last month, the amount of earth shielding was considerably increased. The effect of this upon the vertical stability of the magnet tunnel was not fully clear until mid-May. It was then apparent that it is mandatory to support the tunnel circumference with piles.

The project was authorized to proceed with detailed design of the machine proper following approval by the Director of Research.

Massachusetts Institute of Technology

In anticipation of the transfer of the Institute's contract for the High Energy Physics research from the Office of Naval Research to the Commission in F. Y. 1959; the Director of Contracts initiated discussions with the Chief of the Physics and Mathematics Branch, Division of Research. It was agreed that a joint meeting with the Institute, the ONR and the Commission would be called to work out a smooth transfer. This program is closely related to the research that will be undertaken in the Cambridge Electron Accelerator. Work on a master contract with the Institute has been set aside until the peak load

of contract actions has passed by.

New York University Computing Center, Contract AT(30-1)-1480

The IBM 704 computer will be ready for delivery on about June 18th. Alterations of the second floor of the NYU building where the computer is to be installed should be completed by then. NYU has been requested to reduce the operating staff. Effective June 1st the number of shifts will be reduced from four to three.

Nuclear Metals, Inc., Contract AT(30-1)-1565

NYOO received final comments of the Controller on proposed Modification No. 9 which, in essence, transforms Nuclear from the operator of an AEC owned laboratory to an independent research organization working in its own facilities. NYOO reviewed and submitted a statement on these comments. In addition, NYOO provided further information to show why it has become impracticable to compare costs of the building that Nuclear proposes to build at Concord with the building they had proposed originally to erect in Cambridge.

Relocation of some personnel and operations to another building at 124 Albany Street in Cambridge was completed. This will reduce the number of people in the Hood Building, and remove from it the most potentially hazardous operations.

Princeton University Project Matterhorn, Contract AT(30-1)-1238

The joint NYOO-Princeton Contractor Selection Board interviewed General Electric, Allis-Chalmers-RCA and Westinghouse before selecting from among their proposals for design and fabrication of the new experimental device for the thermonuclear program. The Board recommended to the Manager that negotiations be initiated with Allis Chalmers Mfg. Co. for design, fabrication and installation of the Model C Stellarator, together with its housing and components. The Acting Manager has requested Princeton to initiate negotiations with Allis Chalmers for design, fabrication and installation of the device, but to omit design and construction of the buildings, contingent upon Headquarters approval of the selection and appropriation of funds by the Congress.

Early in May the Acting Manager and Director of Contracts met with the Division of Research and other interested Headquarters staff concerning administrative aspects of Project Matterhorn and for planning of the expanded activity.

Princeton University Accelerator Project, Contract AT(30-1)-1916

Two principal items under discussion are AEC rights of use for the machine and the overhead. The NYOO Audit Branch is preparing a detailed statement of its analysis of the University's overhead and those elements chargeable to research activities. This should be ready early in June.

The Project requested authority for advance procurement of structural steel for the administration building of the Project. Approval was given after NYOO had obtained the concurrence of the Director of Research. Requests have also been received for advance procurement of air conditioning and office furniture.

University of Rochester Cyclotron Project, Contract AT(30-1)-875

The Manager authorized the expenditure of \$100,000 for design and construction of the Elementary Particle Physics Building for the project. NYOO recommended to Washington-Research the University's proposal for disposition of title to the building. The arrangement proposed is currently in force for the building erected at the Atomic Energy Project under Contract W-7401-eng-49. In essence this would give the Commission use and occupancy of the land for 25 years, give the University a right to purchase the building if not in use for AEC work, and give the AEC a right to occupy and use the buildings subject to a restriction upon hazardous uses.

Sylvania Nuclear Corning Corporation, Contract AT-30-1GEN-366

Sylvania Corning informed NYOO of its decision to postpone the planned move of its atomic energy activities to Andover, Massachusetts.

Following an unfavorable report from the Brookhaven Area Manager, Reactor Development turned down Sylvania's proposal to resume construction of a plutonium laboratory for AEC work, and to relocate the laboratory at Brookhaven. Work on this stopped after the thorium explosion.

Material Loan Contracts

Negotiations for the loan contracts with New York University (for a sub-critical assembly loading) and with Pennsylvania State University (for the loading of its reactor are still suspended. Reactor Development expects to have a paper to the Commission soon that will revise the loan terms.

Other Notable Contract Actions

NYOO began draft of an equipment loan contract with a zoological station in Naples, Italy. The equipment is being ordered by NYOO and is scheduled to be delivered to Naples early this fall. The procurement of the equipment is being done through formal advertising. NYOO also drafted a cost-sharing-lump-sum contract with the Inter-American Institute of Agricultural Sciences in Turrialba, Costa Rica. The contract was sent to the State Department for their concurrence before it is sent to Turrialba.

Inspection Division

During May, one hundred three 10 CFR 30 (Byproduct Material) licenses, and thirty-three 10 CFR 40 (Source Material) licenses were received for inspection. This makes a total of 1,144 Byproduct Material licenses, and 227 Source Material licenses, which is a grand total of 1,371 licenses.

Twenty-nine Byproduct Material licenses, and four Source Material licenses were inspected.

The Director and his Assistant attended a 3-day Inspection Division personnel meeting at Augusta, Georgia. The meeting included a tour of one of the reactors, and the chemical separation plant.

Personnel

Federal Personnel Statistics

During the month the following personnel activities took place:

- 69 interviews with prospective candidates
- 32 screening, preliminary or courtesy interviews
- 28 interviews with candidates and operating officials
- 23 job evaluations completed
- 5 selections of candidates
- 2 persons entered on duty

Five one-hour training conferences were held to inform supervisory personnel of the change in the NYOO time and attending reporting procedure, and to discuss supervisory problems and practices in time and attendance administration. Thirty-six supervisors at all levels participated. A training course was held for division timekeepers and alternates in the revised reporting procedure; 28 employees participated.

Four training sessions on the conduct of employees in travel status were held under the joint auspices of the Budget and Finance and O & P Divisions; 34 employees attended. Organization and methods reviews were made of organizational units in the Budget and Finance Division and the Administrative Operations Division.

The Director and the Personnel Officer of the Division participated in the Annual Conference of the Federal Personnel Associations, 2nd U. S. Civil Service Region, held May 2-3 at Bear Mountain, N. Y.

The Deputy Director of the Division participated in an American Management Association Insurance Conference held May 8-10 in New York.

Contractor Personnel

The "standard" Appendix A for contracts with the Vitro Corporation of America has been revised as a result of extensive negotiations among representatives of Washington Organization and Personnel Division, Vitro, and this office.

Approval was granted to extend to monthly exempt employees of the Brookhaven National Laboratory, who are regularly assigned to shift work, the same overtime and compensatory time benefits that are accorded weekly and hourly employees.

Fifteen renewals and 4 letters of designation were processed in connection with NYOO Personal Services Contracts.

Discussions were held with representative of IBM Co. on industrial relations and issuance matters relating to a proposed cost-sharing contract.

Public Information

The considerable advanced planning and the follow-through operations required for prompt distribution of material (press releases, digests of papers, full texts of speeches, etc.) to insure thorough press coverage of the Inter-American Symposium on the Peaceful Uses of Nuclear Energy held at Brookhaven National Laboratory took top priority during May.

The Director, Public Information Service, was named Symposium Information Officer and spent May 12-17 at Brookhaven National Laboratory. NYOO was set up as the Press Office for the New York area under the direction of the Assistant, Public Information. Daily hand delivery of press releases and

and other printed data was made to a selected media list, and many specific information requests on Symposium happenings were answered.

Several papers and news agencies had reporters at the Brookhaven National Laboratory. Director, Public Information guided them -- getting necessary facts, setting up interviews with scientists, etc. She also wrote news releases from the Laboratory and teletyped them to NYOO for distribution to the list. A survey made after the Symposium indicated a much heavier coverage of the event than had been anticipated. It also showed that the press people felt that they were well serviced, and that the material was well prepared.

A chemical explosion which occurred at the Brookhaven National Laboratory during the Symposium proved to be a complicating factor. Because there were reporters on the scene when the incident took place, the stories got to the papers before a full statement was issued by the Laboratory. NYOO was flooded with requests for explosion facts and as soon as they were forthcoming, the Public Information Service began answering the many inquiries. By noon the next day, interest in the accident had subsided and press attention returned to the subject matter of the conference.

Director, Public Information Service conferred with John Langeman for a projected story in Popular Science Magazine, and with Harvey Cort, Columbia Broadcasting System, who is doing research for an "atomic age" television series.

Press inquiries on fallout and strontium were outstandingly high. Much time was spent obtaining information for local as well as out-of-town reporters.

Routine requests for films were somewhat lower owing to the end of school terms and cessation of club programs. The film library of Public Information made available 290 films which were shown to approximately 14,000 people.

Security

Personnel Security Branch

A total of 398 clearance actions were completed. 136 were under contracts, and 262 were under Access Permits.

Four applicants for security clearance were informally interviewed at the request of other Operations Offices.

Fifteen applicants for security clearance under activities administered by NYOO were informally interviewed.

Two formal hearings were held for applicants for security clearance within NYOO jurisdiction, in accordance with the Commission's Administrative Review Procedures. During this period, the Division was not called upon to conduct hearings for other Operations Offices.

One hundred forty-five contractor clearances and 35 Access Permit clearances were terminated.

Physical Security Branch

During the month, an initial security inspection was conducted at one contractor installation for another Operations Office. This inspection resulted in a recommendation that this contractor installation be approved as a security facility.

Twenty-nine established contractor installations were re-inspected.

Initial security inspections were conducted at 15 Access Permittee locations and approval for the receipt of classified documents is being withheld pending compliance with Commission requirements. 10 of the Permits are "Secret", and 5 "Confidential".

The Chief, Physical Security Branch, met with representatives of the AEC Computing Facility to discuss security requirements under their expanded program.

Technical Liaison

Access Permit Program

During May 7 new access permits were assigned to NYOO. Three have access to Secret Restricted Data. There was one amendment to include Secret Restricted Data. One access permit has been terminated. This brings total number of access permits assigned to NYOO up to 426 — 224 have access to Secret Restricted Data and 202 have access to Confidential Restricted Data.

Accountability

There was a transfer of special nuclear materials between Denmark and the U. S. on 5/31/57, and a transfer of special nuclear material between the

United Kingdom and the U. S. on 5/29/57. NYOO personnel were present at the transfer of this material as Representatives for the USAEC on behalf of the USA.

Construction and Engineering Branch

Included in the activities of the Construction and Engineering Branch were the following:

1. Attendance at staff conferences of the CEA and PPA Projects.
2. Visits to the offices of C. T. Main, Inc., Boston, Massachusetts, and Gibbs and Hill, New York City for the purpose of reviewing A/E services being furnished by these firms in connection with the CEA and PPA Projects.
3. Visits to the office of Walter Kidde, Constructors, to discuss the master plan for the Model "C" Site Development.
4. Visits to 4-6 Washington Place to determine progress of construction in connection with the installation of the IBM-704 Computer Facility.
5. Visits to the office of the Director of Plants and Property for New York University relative to negotiations of a change order in the sub-contract with McCann, Inc.
6. A/E selection completed for Title I work for NYOO housing at 201 Varick Street. Selected A/E was Lockwood Greene Engineers, Inc. Liaison with Headquarters, with local GSA and coordination with all divisions of NYOO in connection with this project.

Visitors to Administrative Offices

<u>Date</u>	<u>Name of Visitor</u>	<u>Staff Member Visited</u>	<u>Subject of Discussion</u>
5/1-3	Milton Klein, COO Ellison C. Shute, SFOO H. A. Fidler, SFOO C. Vanden Bulck, OROO W. Hughes, RES, Wash. Dr. T. H. Johnson, RES, Wash.	J. C. Clarke	Research Contract Study Task Force

5/1	Mr. Charles C. Eckles General Motors Corporation	M. Durso	Review of re- search and develop- ment reports
5/2	Mr. Mathen J. Letich American Bureau of Shipping	M. Durso	Review of re- search and develop- ment reports
5/6	Dr. J. E. Flynn - ONR	J. C. Clarke W. H. Donnelly	Briefing on local organization of ONR
5/7	P. Burgard - IBM	H. J. O'Neill	Issuance and Indus- trial Relations
5/7	Mr. William Seaman American Cyanamid Company	M. Durso	Review of re- search and develop- ment reports
5/7	Mr. S. Wallach Universal Winding Company	M. Durso	Review of re- search and develop- ment reports
5/13	Mr. R. W. Burnett, Business Mgr Cyclotron Project, University of Rochester Contract AT-30-1-875	L. Graup H. Baum	Property manage- ment activities
5/21	Wm. Satterfield, Jr. AEC Wash- ington, Insurance Section	H. J. O'Neill	Insurance
5/21	J. Richtmyer New York University	H. J. O'Neill	Issuance and Industrial Rela- tions
5/23	John Langemann	G. Urrows	Popular Science Story
5/27	Mr. C. R. Wilson, Purchasing Agent - Yale University Contract AT-30-1-1691	L. Graup H. Baum	Property Manage- ment activities
5/28 29	Mr. Milton B. Wenger Vitro Corporation of America	M. Durso	Review of re- search and develop- ment reports

HEALTH AND SAFETY LABORATORY

Consultation and Educational Services

Technical Consultation

G. R. Finlay, Norton Co., Niagara Falls, Canada	Sampling of uranium oxide and thorium oxide fusions
E. C. J. Urban, Wayne State University	Background radiation level measurements
B. S. Goodwin, U. S. Army Ordnance	Analysis of soil samples from area of destructive testing of uranium weapon
H. Miller, Bethlehem Steel	Instruments and calibration for radiation surveys in steel mill
N. W. Edmund, Edmund Scientific Corp.	Laboratories for measurements of radiation from eye pieces contain- ing thorium bearing glass
R. W. Brenneman, Lockheed Aircraft	Hazards involved in the machining of beryllium
Dr. N. A. Baily, Radiation Therapy Dept., Roswell Park Memorial Institute - Buffalo, New York	Hood designs for use with isotopes

Bureau of Mines Respiratory Committee

At the request of the U. S. Bureau of Mines, U. S. Department of Interior, the Chief, Industrial Hygiene Branch has been appointed to an advisory committee for the development of requirements for testing and approval of personal respiratory protective equipment.

Civil Defense Exercise

The Chief, Radiation Branch participated in a Federal Civil Defense Administration exercise at Binghamton, New York on May 23, 1957.

Meetings

The Chief of the Radiation Branch attended the regular meeting of the AEC Advisory Committee on Biology and Medicine at the University of Rochester; the Radiation Research Society Meeting in Rochester; a meeting of the National Committee on Radiation Protection Subcommittee No. 9 on gamma emitting materials at Columbia University, and a meeting called by the New York State Health Commissioner Hilleboe to discuss the feasibility of pilot study of medical x-ray exposures in upstate New York.

Radiation Lectures

The Chief, Radiation Branch, gave a talk to the Jamaica High School Science Club on May 3, 1957.

The Chief, Radiation Branch, addressed the annual meeting of the New Jersey Society of Professional Engineers at Atlantic City on May 4, 1957.

The Assistant Chief, Radiation Branch, gave two talks at the New York City Fire College on May 10 and 23.

Safety and Fire Protection Conference

The Chief, Industrial Hygiene Branch, Assistant Chief, Radiation Branch, and an Industrial Hygienist participated in the Annual Safety and Fire Protection Conference at Rensselaer Polytechnic Institute, May 15. Discussions of health hazards in uranium mining, milling, refining, and fabrication, and Pu, Be and U powder handling were presented.

Environmental Health Services

Avco

A report has been transmitted covering beryllium operations at the Avco Manufacturing Corporation in Lawrence, Massachusetts. Avco is machining large beryllium blocks for the Air Missiles Command of the USAF. Copies of the report have been transmitted to the Air Missiles Command and to the Lockland Area Office for their information.

Babcock and Wilcox

A report has been transmitted to the Division of Civilian Application covering a survey which was performed at the B&W Nuclear Facilities Plant, Lynchburg, Virginia. The study was part of the general investigation of health

hazards in fuel element processing plants.

Norton Company

A report has been transmitted forwarding the results of air samples which were taken at the Norton Company in Worcester, Massachusetts. These samples were part of the general program of obtaining information on health and safety practices in fuel element fabrication operations.

Nuclear Metals

A fire and safety survey was made of the Nuclear Metals, Inc. facilities in Cambridge. Several recommendations were transmitted in a report to the Contracts Division. These recommendations were minor in nature and reflect the unsettled situation at the plant which has been created by the move to Albany Street. As soon as the move has been completed, another survey will be performed.

Metals and Controls

A report has been transmitted covering a survey of the fuel element processing facility of Metals and Controls, Inc. The study was conducted as part of the general investigation of health hazards in fuel element processing plants. Inasmuch as the Attleboro shop of Metals and Controls is a mixed facility, a survey of the contract operations was performed at the request of Schenectady Operations Office, and copies of the report have been forwarded to Schenectady and also to the Division of Civilian Applications.

Surveys

Accelerator Survey Reports

Reports of accelerator surveys at the University of Michigan and the University of Chicago were completed and distributed during May.

Preoperational Survey at Harvard - MIT Reactor

The Health and Safety Laboratory was requested to conduct a preoperational background survey in the Harvard - MIT reactor area. After consultation with the Director, Division of Civilian Application, it was felt that this survey should not be undertaken by HASL, and Dr. Manson Benedict of MIT was notified accordingly.

Survey at Privately Owned Betatron

The Radiation Branch was requested by the operator of a privately owned betatron used for medical purposes to conduct a radiation survey. In line with established Commission policy, this was refused since it is believed that private sources of such services are reasonably available.

Analytical Support for Field Surveys

<u>SUMMARY</u>	<u>RECEIVED</u>	<u>RUN</u>	<u>BACKLOG</u>	
			<u>This Month</u>	<u>Last Month</u>
Uranium				
Air Dust	607	179	428	0
Urinary	228	254	70	96
Misc	0	21	0	21
Beryllium				
Air Dust	36	85	15	64
Urinary				
Misc	18	68	0	50
Radium				
Urinary				
Misc	0	10	0	10
Radon				
Thorium				
Thoron				
Fluoride	9	0	106	97
Misc	2	2	0	0
U-235-Urine	0	0	12	12
U-233-Urine	0	0	3	3
TOTALS	900	619	634	353

Instrumentation

DTR System

The tape counting equipment has been checked out; one module, the present data unit, is not completed by the contractor. However, the duplicate model unit has been used for check out. All the units have been tested into the system and await the last component.

The behaviour of the equipment is completely predictable statistically and it operates generally within good limits. The background subtraction principle and the mode of securing reliability through electronic circuitry is satisfactory.

Radon Equipment for DTR

The initial design permits conversion of the equipment to transistorized operation with recording into the DTR set up. The equipment will be assembled for full testing during June and then turned over to Electronic Construction group for apparatus fabrication and assembly.

Low Level Counting Equipment for Strontium 90

Two Libby counters are in operation with backgrounds within the normal reported limits on this type of equipment.

The six position geiger counter unit has been successfully reworked with backgrounds stabilized. The Anton 1007 type tubes which in standard version are delivered to us with 1.4 milligram per sq. centimeter mica windows are used in three of the positions, the other three positions utilize tubes with thin steel diaphragms having a density of 12 milligram per sq. centimeter. These tubes, with steel faces have a lower average background count than the mica window tubes. Moreover, they display an improved counting efficiency even though their higher absorption reduces the beta flux. In contrasting the ratio of potassium 40 to strontium 90 beta rays each of the types of windows displays a ratio commensurate with the absorber character.

Negotiations are still continuing with the Anton Electronic Laboratories to determine whether the background can still be reduced by improved tube fabrication techniques.

Mercury Vapor Detector

The unit has been completed and now awaits calibration by the Industrial Hygiene Branch. It is operating in accordance with requirements and after the calibration with mercury vapor will be given a field trial.

Nuclear Safety

The following feasibility reports were reviewed and approved by the Nuclear Safety Review Board:

SYLVANIA-CORNING NUCLEAR CORPORATION - FEASIBILITY REPORTS NOS. 1 and 2;
FABRICATION OF BROOKHAVEN FUEL ELEMENTS

FEASIBILITY REPORT FOR THE SWAGING OF ENRICHED URANIUM-ZIRCONIUM ROD SUPPLIED BY GENERAL ATOMICS UNDER LICENSE SNM-69 (NMI-FR-8) - WITH MODIFICATION NMI-FR-8.

NMI-JJP-1A: MODIFICATION OF FEASIBILITY RPT. NMI-JJP-1 FOR FABRICATION AND HEAT TREATMENT OF ZIRCONIUM CLAD ENRICHED URANIUM-MOLYBDENUM IRRADIATION SPECIMENS FOR APDA

SYLVANIA-CORNING NUCLEAR CORPORATION ACCOUNTABILITY STATION MSH FEASIBILITY REPORT NO. 1 - FABRICATION OF BROOKHAVEN FUEL ELEMENTS

NORTON COMPANY FEASIBILITY REPORT NOR-1 MODIFICATION OF MARCH 27, 1957

SUPPLEMENT TO FEASIBILITY REPORT NMI-JW-2 FOR THE FABRICATION OF PRATT AND WHITNEY STAINLESS STEEL FUEL ELEMENTS (NMI-JW-2A)

Weapons Effects

Congressional Hearings

The Director, HASL, and Chief, Analytical Branch, attended the Senate House Atomic Energy Subcommittee Hearings on fallout hazards in Washington, D. C., on May 28 and 29.

Discussions of Fallout

A meeting was held in Washington, D. C., on May 6, to discuss the current soil analysis program, attended by the following:

Dr. W. F. Libby and Dr. J. C. Potts -- Commissioner and Assistant

Dr. C. L. Dunham and Dr. F. Western -- Division of Biology and Medicine

Dr. S. A. Lough, Dr. J. H. Harley, E. P. Hardy, Jr., and Gerald H. Hamada
HASL

Dr. L. T. Alexander, Dr. R. Rietemeier, Dr. R. Menzel and Dr. R. Overstreet -- Department of Agriculture Soil Survey Center, Beltsville, Maryland

Dr. P. Kruger, Nuclear Science and Engineering Corp., Pittsburgh, Pa.

Dr. H. Volchok, Isotopes, Inc., Westwood, New Jersey

The HASL representatives at the above meeting met with Mr. Eisenbud on May 7th to review the discussions on the soil analysis program and to bring Mr. Eisenbud up to date on the current Sunshine Program.

Merril Eisenbud, Lester Machta, Allan Lough, and John Harley met on May 10 to discuss the present fallout monitoring program.

Fallout

8,820 fallout samples were processed during this period.

Operation Plumbbob

Program 30

The Monitoring Equipment has arrived in Mercury, has been checked out completely, and been turned over to the Public Health Service representative for installation. As of this report, the equipment is operating satisfactorily.

Program 32.1

The Countermeasures System has been designed, and contracts for instrumentation will assure delivery as required.

Program 32.2

The Aerial Survey Equipment has been taken to Nevada and the trials have been unusually promising. The instrument has operated satisfactorily, except for a minor stability problem in circuitry, which will be worked out when the instrument is returned to New York in June. The project is complete insofar as test work is concerned. An operating instrument will be left in the hands of the FCDA representative at Mercury so that he can arrive at his own opinions on the device. A primary report will be started in June.

Visitors to the Health and Safety Laboratory

<u>Date</u>	<u>Name of Visitor</u>	<u>Visited</u>	<u>Subject of Discussion</u>
5/1-57	Mr. Kanji Takahashi, Atomic Energy Bureau, Science and Techniques Agency of Japan	Lough Blatz	Plan and design of radi isotope handling facilities; film badge progra
5/2	Dr. Lester Machta, Weather Bureau	Harley	Fallout Program
5/6	W. C. Hoth, J. L. Burhans, W. H. Deckers and A. D. Turissini, General Chemicals Co.	Harley	Regulations governing t use of radioactive substances commercially

5/7	Mr. Frank Huke, Nuclear Metals	Harris Solon	Hazards in beryllium ce amics; nuclear safety
5/8	Mr. Charles Roessler, Curtiss- Wright Research Division	Harley	Beryllium analysis, air filters
5/10	Mr. Bartholomew Puma, General Chemicals Co.	Harley	Uranium fluorimeters
5/10	Dr. E. Tajima, U. N. Committee	Harley	Sr-90 standard samples to be made available by HASL to U.N. members
5/13	Prof. Titterton, University of Canberra, Australia	Lough	Fallout
5/14	Father Cullen, Fordham University	Solon	Background radiation
5/16	Dr. A. Seymour, Div. of Biology and Medicine, Washington	Le Vine Harley Whitnah	Naples Symposium on marine biological appli- cations of radioisotope:
5/17	Dr. Norton Nelson, N.Y.U.	Lough	Research programs at HASL
5/20	Mr. L. G. Grinnell, Nuclear- Chicago	Le Vine	Instrumentation for Naples Laboratory
5/21	Mr. C. R. Beaton, American Traidair Co.	Le Vine	Vibrating reed electron meter
5/28	Mr. Huston, MIT	Harris	Beryllium machining
5/28	Mr. Mont Mason, Mallinckrodt Chemical Works	Harris	Instrumentation, health and safety

SECTION II

BROOKHAVEN NATIONAL LABORATORY MONTHLY STATUS AND PROGRESS REPORT FOR MAY 1957

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

BNL is completing work on reevaluation of the entire AGS Project for submission to AEC early in June. A subcontract for the AGS Magnet Cores was received during the month from BNL and has been forwarded to the NYOO for review and transmission to Washington. The contract amount is \$3,100,929. and the proposed sub-contractor is BALDWIN-LIMA-HAMILTON CORP. of Philadelphia, Penna. Final negotiations for the Magnet Coil procurement are being completed by BNL with National Electric Coil Co. and it is anticipated that this procurement action will be forwarded for AEC approval early in June. A Cockroft-Walton machine, pre-accelerator for the Linear Accelerator, has been received and work started on pre-assembly of this unit.

Work on the Synchrotron structures proceeded well with percentage completion of the general contract increasing from 13% to 27% during the month. 900 running feet of Magnet Enclosure floor, 21 special pile caps, the second floor of the Linac Bldg. and 75% of the 4' thick mat for the Target Bldg. shielding were formed, reenforced and poured. Siding on the Linac Bldg. was 95% completed and 50% completed on the Target Bldg. Masonry partitions in the Linac Bldg. were 50% completed. Overhead traveling crane in the Linac Bldg. was erected. Electrical and mechanical work proceeded with wire way installation about 50% complete, the compressed air and water piping mains were completed in the Magnet Enclosure and 85% of the well water supply and diffusion piping installed.

Bids were received 5/8/57 for the two large diffusion basins and a contract awarded to Mike Stiriz, Inc. The test well was completed and its log is being analyzed. Final negotiations were completed with Pre-Cast Bldg. Sections, Inc. for the high density concrete shielding and a contract forwarded for approval.

18" Cyclotron Building

Title I work is complete. It was reviewed and submitted to the Architect/Engineers for minor changes. The contractor was instructed to make the necessary minor changes before proceeding with Title II work.

Reclamation and Hot Laundry Facility

Preliminary drawings were submitted by the contractor for review. The necessary changes were made and the contractor was instructed to proceed in making the necessary changes.

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Engineering Works Area

This project is now 97% complete. During the month of May, the contractor completed the curbs and roadways, the erection of wall panels, installation of steam line insulation, and required painting. The substation is complete with the exception of testing and trial running.

Medical Research Center

This job is now 31% complete. During the month, substantially all the concrete work below grade was completed in the Reactor Wing. The erection of structural steel was continued in the Laboratory Sector and was approaching completion at the close of the month. The roofing contractor substantially completed the roof purlins in the Hospital Sector. Both the roofing and brick contractors were awaiting completion of structural steel in the Laboratory Sector to resume their work. The installation of utilities is progressing well in all areas of the job.

The Daystrom Co. encountered some minor difficulties with reactor components. These are being corrected and delivery of all but one item is under way. The fabrication of the aluminum reactor tank has been completed and shipment is imminent.

Cosmotron

Pulsing of the Cosmotron began on May 28, 1957. The vacuum chamber has now been replaced in the damaged quadrant in order to permit observation during pulsing of the newly installed conductors. The vacuum chambers have been replaced in the other three quadrants and pumped down to a satisfactory pressure. During this shut-down period the injector Van de Graaff has been used to study the effects of various modifications in the ion source. Changes in the probe geometry and a modification in the potential gradient along the column has resulted in an increased proton beam and better focus. It is now believed that the charge drained from the high voltage terminal of the Van de Graaff generator is so great that the energy droop in the injected protons prevents a large fraction of them from being accepted by the Cosmotron. The cure suggested is a pulsed liner in the Van de Graaff to keep the injected energy constant. This modification is being designed.

The grouting of the floor inside and outside the ring for shielding support has been completed. On the outside, for some unknown reason, the condition of the sand in some locations was such as to prevent the absorption of an appreciable amount of concrete-water mixture. Inside the ring, however, and at certain points outside the ring the sand accepted up to nine bags of concrete per hole. It is the opinion of Mr. Jacob Feld, a Consulting Engineer who is an authority on foundations, that if the sand does not accept concrete mix it is a satisfactory support for the shielding. If the sand accepts concrete mix it is then converted into a satisfactory condition. BNL believes that the floor will now accept the loads needed to support the proposed new shield.

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Electrostatic Generator

An increase in the voltage limit and stability of operation of this machine has been experienced during the past month. It is attributed to repeated applications of Glyptol, principally to the newly installed textolite support column and more recently to the other three columns. A voltage of 3.8 Mev has been achieved, with very little sparking, and it is anticipated that operation at 4.0 Mev or slightly higher will soon be feasible for experimental work.

Liquid Metal Fuel Reactor Experiment
(Babcock & Wilcox Co.)

The reactor design No. 10 has been selected as the LMFRE preliminary reference design. A helium system of cooling the core and side reflectors after dumping is being studied to remove decay heat from absorbed or adsorbed fission products.

Various shielding designs have been studied with the Barytes design appearing to be the optimum on an effectiveness and cost basis. Calculations indicate that two feet thickness of concrete will be required for the building assuming a 200,000 curie source of fuel held up in a heat exchanger when transported by a building crane.

Specifications were prepared for the primary U-Bi pump. Specifications call for 2860 gpm to deliver 25 ft. head. Test pumps will be ordered at earliest possible date so that test results can be applied to similarly designed pumps for the LMFRE. Containment for the primary system was established calling for piping and components to be doubly contained in a close fitting, gas tight secondary containment system.

A steam heat rejection system with a throttling condensing setup is being prepared for the preliminary reference design.

Plant layout and elevation designs have been prepared and released.

Comparisons were made of expected chemical processing costs for breeder and burner LMFR power stations.

The fabrication of the utility test loop has been completed and the loop placed in service. No difficulties with the Deming pump and system have been experienced after 350 hours operating at temperatures between 800 and 900 F. The apparatus for the tilting capsules test has been completely fabricated and awaits test specimens.

A preliminary general arrangement drawing of the BNL Radiation Loop No. 1 based on space allocations was completed. Final design of the out-of-pile components of the loop is proceeding.

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A visit was made to the Engineering Test Reactor for determining exact space available for a U-Bi loop experiment. Details of the ETR pertinent for providing information required for engineering approval were obtained and preliminary design of the system initiated.

Determined the Materials Testing Reactor could not schedule a U-Bi loop at this time due to long-term irradiation program previously planned.

Hot Laboratory Incident

During the afternoon of May 15, 1957 a series of related explosions occurred in the dissolver section of the Fluoride Volatility Process Engineering Test Facility in the BNL Hot Laboratory. This facility is designed to investigate the feasibility of processing spent fuel elements by dissolution in fluoride based interhalide compounds. The basic solvent, bromine tri-fluoride, is a highly corrosive compound reacting readily with most elements. One worker was seriously burned but is expected to recover. Several others were treated at the BNL hospital and returned to work the next day. Exclusive of personal injury the loss is estimated at \$50,000. The incident is currently under investigation and a report will be forthcoming.

Contract Actions

AUI subcontract with the Sylvania-Corning Nuclear Corporation has been approved for the fabrication of 5,000 enriched fuel elements for the conversion of the BNL research reactor.

Research Reports

During this period, 50 papers were approved for publication. This number included 19 on physical sciences, 3 on applied sciences, and 28 on life sciences.

Visitors

The Laboratory was visited by the following, among others:

36 representatives from computer installations conferring on computer machine developments and computational problems, on April 29 and 30.

119 members of the Northeastern Section of the American Society of Plant Physiologists, on May 3 and 4.

21 members, representing 9 European countries, of Organization for European Economic Cooperation, on May 21.

In addition to the above, 72 representatives of 23 different nations visited the Laboratory, most of them for 1 day, a few for several days. They include the following:

16 from Japan

4 each from Denmark and Portugal

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8 from Switzerland

3 each from Italy, Australia, Greece,
and The Netherlands

7 each from Germany and
Great Britain

and one each from the following countries:

Argentina

Pakistan

Belgium

Poland

Brazil

Sweden

China

Thailand

Iceland

Turkey

India

Yugoslavia

Norway

An Inter-American Symposium on the Peaceful Application of Nuclear Energy, sponsored by the Government of the United States, was held at the Laboratory under the auspices of the Atomic Energy Commission, the Department of State, and the International Cooperation Administration, May 13 through May 17. The Symposium was attended by 99 representatives from 19 different Latin-American countries and 132 citizens of the United States.

UNITED STATES ENERGY COMMISSION

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

JUNE 1957

Prepared by Staff of the New York Operations Office

July 12, 1957

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DOE History Division
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NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

JUNE 1957

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Office Management

A breakdown of telephone and teletype traffic for the months of April, May and June showed the following:

	<u>April</u>	<u>May</u>	<u>June</u>
Local Calls	10,477 - \$ 473.87	9,294 - \$ 421.99	10,503 - \$ 476.31
Long Distance	815 1,369.85	739 1,217.05	923 1,615.35
Teletypes	861	813	789

The increase in telephone traffic during June was caused by the accelerated workload in the Contracts Division, Assistant General Counsel's Office, Finance Division and Procurement Branch, due to the close of the fiscal year.

Property Management

Arrangements were made with the U. S. Naval Ammunition Depot, Earle, New Jersey for the disposal of contaminated wastes as follows:

<u>Chicago Operations Office</u>		<u>Tons</u>
Westinghouse Atomic Power Div. (Pittsburgh Area)		780.933
<u>New York Operations Office</u>	<u>Contract</u>	
Nuclear Metals, Inc.	1565	14.9875
Sylvania Corning Nuclear Corp.	366	2.2
Bendix Aviation Corp.	1059	2.25

The third annual contaminated waste disposal program for Brookhaven National Laboratory has been completed. There were 708 drums of contaminated wastes dumped at sea amounting to approximately 300 tons. With the cooperation of the Dept. of the Navy, Third Naval District, New York, the IST "CALHOUN COUNTY" was made available and the facilities at Floyd Bennett Field were again utilized. The entire operation was handled without incident.

During the quarterly reporting period arrangements were made for the acquisition of excess property, as follows:

	<u>Acquisition</u>	<u>Fair Value</u>	<u>Savings</u>
From other AEC Installations	\$139,463.72	\$51,450.22	\$88,013.50
Other Federal Agencies	106,083.10	6,961.81	99,121.29
	<u>\$245,546.82</u>	<u>\$58,412.03</u>	<u>\$187,134.79</u>

Among the acquisitions were: Machine tool equipment for Cambridge Electron Accelerator, Harvard University, Contract AT(30-1)1909 in the amount of \$18,000 at a savings of \$15,000 — Graphite and Bismuth for BNL in the amount of approximately \$59,000 at a savings of approximately \$29,500; machine tools for Project Matterhorn, Contract 1238 in the amount of \$25,000 at a savings of approximately \$18,000. Arrangements were also made with the Dept. of the Navy, Office of Inspector of Naval Material for the transfer of approximately \$70,000 worth of electronic equipment at no charge for use by Yale Ion Accelerator; Princeton Project Matterhorn and Carnegie Institute of Technology.

Arrangements were made to conduct a meeting of representatives of Harvard University (Cambridge Electron Accelerator) and the Boston Navy Yard Division of Operations for the purpose of determining the Navy's willingness to undertake certain machining operations for the Magnet. These would consist of punching 500,000 Magnet Laminations (24" on sides) for approximately 300 tons of transformer iron. There would also be coil windings for large electro-magnets (48 coils of 1 ton each). The Navy has our proposition under advisement and will notify the Harvard representatives of their decision in a few weeks.

There were 195 trips made by 6 vehicles for a total of 15,824 miles travelled.

There were 1102 troy ounces of contaminated and uncontaminated platinum received for processing during the reporting period worth approximately \$110,200.00. Shipped out during the same period were 982 troy ounces of pure platinum for a total value of approximately \$98,200.00.

During the reporting period there were a total of 11 contract closeouts completed.

During the Fiscal Year 1957, there was a total of \$45,960.88 worth of excess personal property disposed of. These included transfers to other AEC Installations, other Government agencies and donations to Health and Educational Installations.

Property Management Appraisals were made of Columbia University, Contract GEN-72 and Sylvania Corning Corp., Contract GEN-366.

Records Management

A Records Management Appraisal was performed at Sylvania Corning Nuclear Corporation.

A visit was made to the Princeton Area Office and Project Matterhorn to assist them in establishing mail and records procedures.

The task of bringing the technical reports card indices up to date has commenced.

Procurement

Purchasing activity in June was heavy. This was due in part to the invitations to bid which were issued to cover term contracts proposed for Fiscal Year 1958.

During Fiscal 1957 the Procurement and Traffic Branch purchased a total of 6010 line items. 2407 requisitions were converted to 2696 purchase transactions, totalling \$426,594. This represented a slight increase over the previous fiscal year's activity.

The total number of Government bills-of-lading issued in Fiscal Year 1957 was 71. Cost of transportation approximated \$6,000 for movements totalling 46,000 pounds. We were able to effect savings of \$1,828 in our traffic operations.

Contracts

Columbia University, Contract AT(30-1)GEN-72

NYOO approved the purchase of a 256 channel-analyser for the physics research program of Dr. Havens. The approved price was \$22,774.

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909

On June 12th, the definitive contract for development, design and construction of the 6 BEV electron accelerator was executed by NYOO. This completed the negotiations that began in April of 1956.

Bids for the laboratory-control building were opened on June 21st. On June 24th, the Deputy Director of Contracts visited Harvard with a staff engineer to examine the bids and to bring them to NYOO for review. The NYOO Contract Review Board completed its review on June 27th and endorsed Harvard's recommendation of award to the low bidder, the Tredemick-Billings Company at \$364,463. The architect-engineer had estimated a fair price of \$408,000 and a minimum price of \$351,600. Harvard was informed of NYOO approval on the same day and proceeded to execute the subcontract. Work began on July 1st. Bids ranged from \$444,183 to \$364,463.

On June 19th, Harvard requested authority to buy 340 tons of steel for the magnet. This request was referred to the Division of Research for approval as an item of advance procurement.

Harvard also submitted during June its proposal for future operations. NYOO staff review has been requested as a basis for planning negotiations. The Division of Research expects to have some operating funds available for January 1958. Harvard has been requested to describe in detail what services and costs it intends to cover through overhead since it requested its usual University research rate in the proposal.

Inter-American Institute of Agricultural Sciences, Contract AT(30-1)-2043

This contract for support of agricultural research and demonstration work at the Institute in Turrialba, Costa Rica, was executed late in June following completion of State Department review and a visit from the Institute's Administrator to Washington and New York. A typical cost-sharing, lump-sum type action was used with some modification to fit it for foreign use.

Lockwood Greene Engineers, Inc., Contract AT(30-1)-2046

Negotiations were completed and a letter contract executed with this firm for Title I work required for the proposed new office for NYOO at 201 Varick Street, New York. The contract provides an option for the AEC to proceed with Title II work. The estimated cost of this architect-engineer service is \$28,000 and the fee negotiated is \$6,000.

Nuclear Metals, Inc., Contract AT(30-1)-1565

NYOO had received the approval of the acting General Manager for modification No. 9 to this contract, which transforms Nuclear from the operator of an AEC laboratory to an independent research organization, the Treasurer of Nuclear visited NYOO to seek a revision of the ceiling on new building operating costs to be shared by AEC because of a significant increase in costs for the building special features. He was informed that NYOO could not consider such a change now, nor could we give any assurance that these increased costs would be recognized in the future. At a following meeting of Nuclear's Board of Directors, the modification was approved. Final execution is expected in July following a few minor nonsubstantive changes. Nuclear began construction of their laboratory building during June.

New York University Computing Center, Contract AT(30-1)-1480

The IBM 704 has been installed and will be in operation sometime next month.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238

It was decided that architect-engineer work for site preparation for the Model "C" work would be obtained through a prime contract with Walter Kidde Constructors, Inc. and NYOO, rather than through subcontract with Princeton; and a letter contract has been executed with Walter Kidde for this work. Discussions with Headquarters and Princeton continue as to how the University and NYOO will contract for the design and fabrication of the device and for necessary buildings. The estimated cost is about \$206,000 and a negotiated fee of \$37,000. The contract covers work beginning in April.

Princeton University, Proton Accelerator, Contract AT(30-1)-1916

Negotiations are continuing for the definitive contract. The principal points in issue are overhead and the relative rights of AEC and Princeton for access to and use of the machine.

University of Rochester, Cyclotron Project, Contract AT(30-1)-875

The University received bids on June 21st for construction of the Elementary Particle Physics Building. Bids are now being analyzed by the University preparatory to recommending award.

Yale University, Heavy Particle Linear Accelerator, Contract AT(30-1)-2052

A definitive contract was executed with Yale for research and development utilizing the accelerator previously designed and constructed under Contract AT(30-1)-1691. The Commission has the right to determine the research for half the operating time of the machine and has a voice in use of the remaining time, through a requirement for mutual agreement. The Commission also has the right to determine the emphasis to be placed upon various projects under this contract.

Material Loan Contract

Negotiations for the loan contract with New York University for its sub-critical assembly material continued suspended pending Commission action upon revised terms for such loans. As for the reactor fuel loan to the Pennsylvania State University, following discussions with the Division of Reactor Development, the University was requested to sign the contract at once or to state its objections without further delay so that the issue can be brought to a head. The University attorney said that the contract would be signed in its present form.

Inspection Division

During June, sixty-eight 10 CFR 30 (Byproduct Material) licenses and five 10 CFR 40 (Source Material) licenses were received for inspection. This made a total of 1,212 Byproduct Material licenses and 232 Source Material licenses which is a grand total of 1,444 licenses.

Twenty Byproduct Material licenses and five Source Material licenses were inspected.

One minor incident involving the accidental discharge of 50 curies of tritium was investigated.

The Assistant to the Director attended a three day meeting of the Health Physics Society in Pittsburgh, Pennsylvania.

Personnel

Federal Personnel Statistics

During the month the following personnel activities took place:

- 46 interviews with prospective candidates
- 11 screening, preliminary or courtesy interviews
- 22 interviews with candidates and operating officials
- 34 job evaluations completed
- 7 selections of candidates
- 25 persons entered on duty

An O & M study and classification review of positions in the Accounting Branch, Budget and Finance Division was completed in connection with a reorganization of that Branch.

The Personnel Officer attended a meeting with Army Classification Officers to discuss the wage board jobs in NYOO. A subsequent meeting is to be arranged.

An O & M study of the Mail and Records activities of the Administrative Operations Division was completed. This review was made to determine staffing needs.

A Training Program for secretaries is being developed by Records Management and the O & P Division for presentation in the early fall.

The Director met with the Brookhaven Area Manager on June 10th to discuss salary administration matters of the Brookhaven National Laboratory.

On June 12th, the Deputy Director met with staff of the Industrial Relations Branch, O & P Division, Headquarters to discuss contractor industrial relations matters.

The Director met with several members of Headquarters Divisions on June 26th to discuss various O & P matters.

Reimbursement authorization was issued approving new salary ranges for administrative and scientific employees of Brookhaven National Laboratory.

Ten college juniors and four high school teachers began work in HASL as part of the summer work and training program.

Public Information

Considerable time was spent planning press coverage for the installation of the IBM 704 Computer at New York University. The Director and Assistant, Public Information Service, met early in the month with representatives of NYU and IBM for an initial planning session and several successive meetings were also held. Open House for the Computer is set for August 15.

Newspaper requests for information was high. Representatives of the Syracuse Herald, Cleveland Plain Dealer, New York Times and New York Mirror were among those serviced.

Assistant, Public Information Service, had several conferences with Harvey Cort, CBS-TV, to further research an "atomic age" television series for the fall. Mr. Cort and Howard Robman, also of CBS, visited NYOO and spoke to the Manager and HASL Director. Director, Public Information Service, left in late June to assist in Public Information plan at Las Vegas.

Routine requests for films were approximately the same as in May. The Film Library made available 260 films which were shown to approximately 12,000 people. Much time was spent, however, in film consultation and future booking for fall programs.

Technical Liaison

Access Permit Program

Secret Permits	2
Confidential Permits	2
Total New Permits	4
Terminations	1
Converted from Confidential to Secret	1
Secret on hand	226
Confidential on hand	203
Total Permits	429

Accountability

Several visits were made to the Sylvania Corning Products, Inc., Plant B, Hicksville, L. I., to inspect and consult with S & C personnel on matters pertaining to the fabrication of the Brookhaven National Laboratory Reactor Fuel Elements.

Sylvania Corning Products, Inc., Metallurgical Laboratory, Bayside, L. I. was visited for the purpose of consulting and assisting S & C personnel in rewriting and revising their Source and Special Nuclear Materials Accountability and Measurement Manual.

Technical Liaison representatives attended the seventh annual AEC - Contractor SS Materials Management Representatives Meeting in Washington, D. C.

On behalf of the Division of International Affairs, Washington, a Technical Liaison representative participated in the transfer of special nuclear material to the Canadian and Belgium Governments.

Technical Liaison representatives, the NYOO Deputy Manager, and personnel from the NYOO Legal Division met with representatives from Sylvania Corning Products, Inc., Daystrom Corporation and Brookhaven National Laboratory to discuss a contract for the fabrication of fuel elements for the BNL's Medical Reactor.

Construction and Engineering Branch

Attendance at staff conferences of the CEA and PPA Projects. Visits to the offices of C. T. Main, Inc., Boston, Mass. and Gibbs and Hill, New York City to review A/E services being furnished by these firms in connection with the CEA and PPA Projects.

Review of plans prepared by Walter Kidde Constructors for development of Model "C" Site.

Visits to 4-6 Washington Place to determine progress of construction in connection with the installation of the IBM 704 Computer Facility.

Participation in discussions preliminary to selection of Theobald Smith House for Model "C" contractor personnel office space.

Visit to Yale University Linear Accelerator Project to observe progress on erection of equipment.

Visits to University of Rochester to attend bid opening for construction of Elementary Particle Physics Building.

Liaison with GSA to coordinate planning in connection with NYOO housing at 201 Varick Street.

Participation in negotiations with A/E Lockwood Greene Engineers, Inc.

Security

Personnel Security Branch

A total of 496 clearance actions were completed. 183 were under contracts, and 313 were under Access Permits.

Six applicants for security clearance were informally interviewed at the request of other Operations Offices.

Fifteen applicants for security clearance under activities administered by NYCO were informally interviewed.

Additional actions were completed on three pending formal hearing cases.

Twenty-five indoctrination interviews were given to new employees of NYCO.

Six exit interviews were given to terminating employees of NYCO.

Fifty-four contractor clearances and 30 Access Permit clearances were terminated.

Physical Security Branch

During June, an initial security inspection was conducted at two contractor installations for other Operations Offices. Both resulted in recommendations that they be approved as security facilities.

Twelve established contractor installations were re-inspected.

Initial security inspections were conducted at fifteen Access Permittee locations and approval for the receipt of classified documents is being withheld pending compliance with Commission requirements. Nine of these permits are "Secret" and eight "Confidential".

Two approved "Secret" Access Permittees were re-inspected for other Operations Offices.

During the week of June 3rd, a Security representative attended a meeting at Washington Headquarters Office on Intrusion Alarm Systems, which was attended by representatives of each Security Division of the Commission.

Visitors to Administrative Offices

<u>Date</u>	<u>Name of Visitor</u>	<u>Staff Member Visited</u>	<u>Subject of Discussion</u>
6/3	John Kelly, MA, Wash. H.C. Brown, Jr., B&M, Wash. H.S. Traynor, GM, Wash.	M. Eisenbud	Radiation detection
6/5	Cathy Covert, Syracuse Herald	G. Urrows	Radiation story
6/6	Edward Macy, Personnel Director, BNL	G. Hubbell	Salary administration at BNL
6/10-11	G.E. Stewart, S. Milligan, R.W. Pearson, all of C & S, Wash.	Graup, Baum, Maffucci, Merola	Appraisal (Property Management)

6/10-11 G.E. Stewart

Hodnett,
Choniak

Traffic Appraisal

6/18 Rodney Stahl,
N.Y. Mirror

M. Mangan

N.Y. Mirror story

6/28 Harvey Cort &
H. Robman, CBS-TV

M. Eisenbud,
M. Mangan

Background for CBS-TV
series

HEALTH AND SAFETY LABORATORY

Consultation, Educational and Other Staff Services

Handling of Beryllium Machining

At the request of Massachusetts Institute of Technology Instruments Laboratory, a representative of the Industrial Hygiene Branch visited their laboratory. The purpose of the visit was to present H & S considerations in handling of beryllium machining to a group of potential manufacturers of a directional sensing device. In addition to the oral presentation, copies of various documents prepared by HASL were distributed.

Technical Assistance - Industrial Hygiene Branch

Dr. Anna M. Baetjer, John Hopkins University	Beryllium machining and ventilation (letter)
Mr. John L. Donovan, Curtiss-Wright, Quehanna, Penna.	beryllium fabrication (letter)
Dr. Robert Verhaaren, Ford Instrument, L. I. C., N. Y.	beryllium hazards (letter)
Mr. Lionel Lewis, Combustion Engineering, Windsor, Conn.	beryllium oxide wash and induction melting of uranium (letter)
Mr. R.J. VanVonderen, Hardware Mutuals, Milwaukee, Wisc.	beryllium toxicity (letter)
David O. Lintz, Wright Air Development, Center, Ohio	collection of fallout samples (letter)
Dr. Newmark, Allied Chemical, Morristown, New Jersey	air pollution and waste disposal (phone)
Arch Epstein, Beryllium Corporation	effluent problems (phone)
Mr. Gella, Bridgeport Brass	extrusion of ingots (phone)

Consultation Services - Radiation Branch

New York State Department of Labor: regarding the accumulation of radiation exposure data for test cases involving violation of Industrial Code Rule No. 38.

Department of Labor and Industry of New Jersey: regarding hazards involved in the establishment of research laboratories at Princeton, New Jersey.

North American Philips: regarding possible medical treatment for over-exposure to radiation.

Bell Laboratories, Murray Hill, New Jersey: regarding the use of cobalt-60 in a civil defense test.

New York State Department of Labor: regarding radiation hazards in television picture tube boosters.

The Electric Boat Company: regarding neutron instrumentation.

Consultation - Schools

The Laboratory summer training program for college juniors and high school science teachers was again activated during June.

Mr. Samuel Hirschman, a science teacher from Great Neck, Long Island, N.Y. visited the Laboratory with approximately 20 students.

Meetings

The Chief, Radiation Branch, attended a special meeting of the AEC Advisory Committee on Biology and Medicine which met with Commissioner Strauss.

HASL representatives attended a meeting of the American Nuclear Society in Pittsburgh. A portion of a paper entitled "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants" was presented by a member of the Radiation Branch.

HASL representatives attended a meeting of the Health Physics Society in Pittsburgh.

Symposium on Analytical Progress in the Nuclear Field, at Purdue University, Lafayette, Indiana, June 13 - 15 was attended.

Seminar on Sr-90 in Milk at the National Dairy Research Laboratories, Inc., Oakdale, Long Island, June 19th. Chief, Analytical Branch spoke.

The Deputy Director represented the AEC at the dedication of the I T & T Standards Laboratory at Clifton, New Jersey on June 11th.

Meeting in Washington re: Stratospheric Sampling on June 24th was represented by HASL.

Publications

Report NYO-2065, "Measurement of the Scatter Component from a Kilocurie Cobalt-60 Source" by Leonard R. Solon was completed and submitted to the Technical Information Service for reproduction and distribution.

Environmental Health Services

Aeroprojects, Inc.

The report has been submitted covering thorium air concentrations at Aeroprojects, Inc. Aeroprojects is carrying on a development program to evaluate the liquid metal fuel components. Analysis of the samples for thorium indicated minimal concentrations.

Brookhaven National Laboratory

At the request of the Manager of Operations, an extensive investigation was made of an explosion which occurred at BNL on May 15th. The results of this investigation were prepared for the presentation of the Manager to the General Manager. The report contained a detailed explanation of the causes and effects, together with recommendations for the improvement of operations of this type at BNL.

Calibration

A number of instruments were calibrated for the New York State Department of Labor.

Middlesex Sampling Plants

A report has been transmitted to the New Brunswick Laboratory covering a survey of approximately 150 surplus items presently being stored at the Middlesex Sampling Plant. These items were surveyed for surface alpha and beta-gamma activity. It was recommended that all items be disposed of according to various sections of AEC Manual 5170-1411 and 5182.

Nuclear Metals

A Fire and Safety Protection survey was made of the Hood Building and the Albany Street Building of Nuclear Metals. In general, fire and safety hazards appear to be under good control. Several recommendations of a relatively minor nature were made to improve the safety status of the operation.

Rocky Flats

At the request of the Director of Biology and Medicine, a representative of the Industrial Hygiene Branch visited the Rocky Flats plant of the Dow Chemical Company to investigate an explosion which occurred at that plant. Purpose of the investigation was to provide a critical review of the procedure followed by health personnel and operating personnel immediately after the incident. A report has been transmitted forwarding the findings.

Meetings and Conferences

Waste Disposal Meeting

Mr. Daniel Lynch, Consultant of HASL, presented a talk to the Laboratory staff on his attendance at the waste disposal meeting recently held at Johns Hopkins.

Radiation Conferences

The Chief of the Radiation Branch visited the Cambridge Electron Accelerator Site to discuss the employment of movable shielding blocks with Dr. Livingston.

The Chief of the Radiation Branch visited the Yale Linear Accelerator which is nearing completion to discuss the radiation protection program.

The Chief of the Radiation Branch visited the Sloane-Kettering Institute at Dr. Laughlin's request to review recent development in the calorimetric measurement of radiation.

Nuclear Metals in Cambridge was visited to discuss certain hazards. Feasibility Reports to be reviewed by the NYOO Nuclear Safety Committee.

A visit was made to Washington at the request of Dr. C. Beck of the Division of Civilian Application to review research proposals involving reactor safety.

At the request of Dr. D. Worf from the Division of Reactor Development, a representative of the Radiation Branch visited him in Washington to discuss a radiological survey of New York Harbor proposed by the DRD in cooperation with the Coast Guard.

Syracuse Herald Journal Article

Radiation background measurements were discussed with Cathy Covert, a feature writer on the staff of the Syracuse Herald Journal, at the suggestion of Dr. Bentley Glass of Johns Hopkins. She has expressed an interest in writing a series of articles on Dr. John Gentry's proposed report on the relationship between congenital malformations and radiation background.

Washington Conferences

HASL representative participated in a meeting held in Washington called by Commissioner Libby on the subject of radiation background measurements.

Surveys

Analytical Support for Field Surveys

<u>SUMMARY</u>	<u>RECEIVED</u>	<u>RUN</u>	<u>BACKLOG</u>	
			<u>This Month</u>	<u>Last Month</u>
Uranium				
Air Dust	140	485	83	428
Urinary	266	214	122	70
Misc	14	0	14	0
Beryllium				
Air Dust	218	46	187	15
Urinary				
Misc	61	0	61	0
Radium				
Urinary				
Misc	14	0	14	0
Radon	50	50	0	0
Thorium	13	6	7	0
Thoron				
Fluoride	18	106	18	106
Misc				
U-235 Urine	0	0	12	12
U-233 Urine	0	0	3	3
TOTALS	794	907	521	634

Survey of Uranium Mills

At the request of Mr. Robert Barker of the Division of Civilian Application, Washington, a meeting was called to discuss the Health and Safety Laboratory surveys of the uranium mills. The meeting was attended by Dr. Tom Ely, B&M, Richard Kennedy and Ernest Van Blarcom of the Division of Raw Materials, Kenneth Orski, Ralph Borlick and Robert Barker of the Division of Civilian Application. The Division of Civilian Application has requested that several items of investigation be carried out in the course of our studies in order that more complete information may be obtained. There was general agreement on all aspects of the meeting.

Fundamental Studies

Background Measurements

Background radiation measurements were made by the Radiation Branch at the proposed Health and Safety Laboratory location at 201 Varick Street, New York.

Instrumentation

DTR System

Additional statistical data has been taken on the first unit and is normal. The principles of operation checks out as designed. On the addition of two more counters some interaction (transfers spurious pulses) was encountered and is being eliminated from the operation. Equipment is moving towards routine operation, however, it is being thoroughly checked to eliminate any possible maintenance problems.

Radon Equipment - DTR

The transistorized circuitry has been assembled and tested with the chamber and operates completely satisfactorily. A final layout will be made before investigation of background counting can be completed.

Low Level Counting Equipment for Strontium-90

The test Libby Counter tube which has a stainless steel wall is operating at approximately 0.3 counts per minute background. The Mylar counter tubes, which were operating satisfactorily showed an appreciable rise in their background to approximately 0.9 counts per minute. These are being rebuilt and further tests must be performed.

The six position geiger counter unit has been operating satisfactorily during this period.

Nuclear Safety

The following feasibility reports were reviewed and approved by the Nuclear Safety Review Board:

NMI-FR-7A: MODIFICATION OF FEASIBILITY REPORT NUM-FR-7 FOR FABRICATION OF COEXTRUDED ENRICHED URANIUM ALUMINUM ALLOY TUBES FOR WESTINGHOUSE

SYLVANIA CORNING FEASIBILITY RPT. NO. 42 (SPONSORED TASK C-60) AEC, SCHENECTADY SUPPLEMENT NO. 6 TO FEASIBILITY REPORT NO. 35 SPONSORED TASK C-36

Weapons Effects

Operation Plumbbob

Monitoring equipment for Project 32.1 has been installed at the Nevada Test Site and will be calibrated prior to the first countermeasures event. Personnel of the Industrial Hygiene, Radiation and Instruments Branches participated in the field. Equipment for off-site monitoring by the Public Health Service is operating satisfactorily.

Fallout

6,940 fallout samples were processed during this period.

Visitors to the Health and Safety Laboratory

<u>Date</u>	<u>Name of Visitor</u>	<u>Visited</u>	<u>Subject of Discussion</u>
6/3	Mr. Harry Traynor, Howard Brown, John Kelly: AEC, Wash.	Blatz, Solon	HASL participation in Inter-Agency Troubleshooting program; visit to one troubleshooting location
	Capt. R.H.Smith, US P&I Agency	Harris	Radioactivity shipboard hazards
6/4	Dr. Merton Beeler, New England Deaconess Hospital, Boston	Lough	Cosmetic uses of isotopes and regulations
	Dr. Chas.E.Miller, ANL	Lough LeVine	Whole body counter
6/5	Dr. D.Beninsen, UN Scientific Committee on the Effects of Atomic Radiation	Harley	UN report on radiation
	Mr. Carlos Martinoya, Chief, Lab. of Nuclear Physics, Santiago, Chile	Lough	Purchase of electronic equipment
6/6 18	Mr. R. Stahl, NY Daily Mirror, L. Hoffman, photographer	Harley	Article on radiation
6/7	Dr. Frank Owings, TIS, Wash.	Blatz	Draft of book on shielding by Dr. H. Goldstein
6/11	Mr. Less Crawley, Alcoa	Harris	Magnesium thorium alloy cutting and machining
6/12	Mr. Ladd, Cooper Development Corp., Monrovia, Calif.	Harris	High altitude sampling
	Dr. Herbert Goldstein, NDA	Blatz	Resolution of controversial aspects of book on shielding
	Dr. Elda Anderson & Mrs. D. Bolton, NYU	Eisenbud Lough Blatz	Aspects of the cooperative HASL-NYU training program

6/13	Mr. John Kelly, MA, Wash. Don Gale, Naval Research Lab.	Solon	Plan for the Inter-Agency training program
	Mr. Frank Brannigan, O & P, Wash.	Harris, Weinstein	Training aids
6/14	Dr. D. Sharpe, American Nuclear Science Corp.	Whitnah	Contract for radio-chemical analyses
6/17	Mr. Kailo, City Administrator's Office, Radiological Advisory Committee	Lough	Radiological Unit in NYC
	John Kelly, MA, Wash. and Dr. K. Spangenberg, Stanford University	Solon, LeVine	Image converter
6/20	Dr. R. Boss, Dr. W. Chapman, Dept. of the Navy	LeVine	Instrumentation
	Dr. Udell, NYS Dept. of Labor	Blatz	NY State Industrial Code
	Mr. O'Hara, NYC Police Dept., Bomb Squad	Blatz, Solon	Unclassified matters of radiation and nuclear safety
	Prof. Morris Shamos, NYU	Blatz	Radiation protection and use of byproduct material
6/21	Messrs. Thaxter and Morrow, UCLA	Harris	Health hazards of beryllium and uranium
6/24	Mr. John Evans, Lockwood Greene	Lough	Varick Street plans
	Mr. Walker, Dow Chemical, Denver, Colorado	Harris	Beryllium engineering
6/25	Dr. H. Snyman, Univ. of Praetoria, So. Africa	Lough, Harris, Harley	Epidemiology of non-communicable diseases
6/26	Mr. Battis, Fed. Metals Div., American Smelting & Refining	Harris	Scrap processing
	Mr. Allan Hughes, Hughes Organization, New York	Lough	Fallout during last 45 days
6/28	Mr. H. Cort and H. Robman, CBS-TV, N. Y.	Harley	Laboratory tour
6/14	Mr. G.H. Cameron, NYC Dept. of Hospitals	Blatz	Sampling and evaluation of airborne radioactive contamination

SECTION II

BROOKHAVEN NATIONAL LABORATORY MONTHLY STATUS AND PROGRESS REPORT FOR JUNE, 1957

BROOKHAVEN AREA OFFICE

Alternating Gradient Synchrotron

The re-evaluation of the AGS Project has been received and reviewed by the Area Office and is being forwarded to Washington. The overall schedule for completion of the project remains the same, but the cost, exclusive of contingency, exceeds the presently approved amount of \$26,000,000 by \$826,000. As to schedule, internal schedules for components of the project are being examined and new curves for the overall project will be submitted to Washington upon receipt of instructions from the Division of Biology and Medicine as to action to be taken in connection with the revised project estimate.

An AUI subcontract for the Magnet Cores was forwarded during June to Washington for approval. Subcontracts for the Magnet Coils, Target Building Shielding Blocks and RF Ferrites were forwarded during the month to New York Operations for approval.

During June the floor slab of the Magnet Enclosure and the thick shielding foundation mat were completed. Sixty-one special pile caps were poured, making a total of 91 of 120 completed. Metal siding was substantially completed on both the Target and Linac Buildings. Magnet Enclosure overhead crane was erected. Waterproofing the exterior of the Magnet Enclosure was 50% completed, and a substantial start was made on the earth backfill. The Linac Building ground floor slab and 50% of the Linac Tunnel were poured.

At the end of the month the steam fitters, the sheet metal workers, and the ornamental iron workers left the job; and the local concrete plant has advised it will be forced to cease operations if the cement plants remain shut down. The job will be seriously delayed if these strikes are not settled during early July.

18" Cyclotron Building

During the month of June the A/E submitted Title II drawings and specifications which have been given final review by AEC and AUI. Advance notice was mailed to approximately 80 construction contractors.

Hot Laundry and Reclamation Facility

Title I work was submitted by the A/E to AEC for review. Review of changes and specifications of Title I work is being made and will be returned to the A/E so the necessary changes can be made.

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Engineering Works Area

This project was completed on June 19, 1957, with a small list of exceptions. On this date the building was transferred to Brookhaven National Laboratory for operation and maintenance.

Medical Research Center

This job is now 35.6% complete. During the month the Hot Therapy room, the High-Low Level Counting Room roof, and miscellaneous foundations and walls in the Reactor Wing were poured. Form work for the Hot Source Area and the first floor slab in the Reactor Wing were started.

The installation of electrical, plumbing, sprinkler and heating, ventilating and air-conditioning utilities are making substantial progress in all areas. The installation of pipe insulation and HVAC instrumentation was started.

Daystrom has solved their previous difficulties with the reactor control rod drives and has started manufacture of these components. Complete shipment should be made in the near future.

Liquid Metal Fuel Reactor Experiment
(Babcock and Wilcox Company)

Construction of four test loops for investigation of the suitability of Croloy 2 $\frac{1}{2}$ for use with liquid bismuth is progressing. Two loops will be fully annealed, and two will be normalized and tempered.

The Research and Development section of the Phase I report was completed. A sampling system suitable for use on the LMFR was also completed.

Shielding calculations were made to determine the gamma spectrum at the core surface, fission product activity in the various component cells, and required fitness of the reactor cell plugs. Reactor start-up studies were completed for various rod withdrawal speeds at various fuel circulation times. No difficulty is expected in obtaining a perfectly safe operating procedure.

The tilting capsule program is under way and is now checking chemical cleaning methods. Results to date indicate that sand blasting and cleaning with inhibited 5% HCL solution followed by treatment with 5% iodine solution in methanol provide a metal surface which is most easily wetted by bismuth alloy. Procedures are being developed for analyses of uranium, zirconium, magnesium, iron and bismuth by both wet chemical and spectrographic methods. The determination of rare earth and thorium has been initiated.

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A study of Radiation Test Loop No. 1 indicates the system containment requires cooling in the event of a rise in ambient air during operation. The preliminary design of Radiation Test Loop No. 2 is progressing. Facilities for Radiation Test Loop No. 3 have been offered in the MTR. Evaluation of these facilities based on the available flux is in process.

Cosmotron

Assembly of the Cosmotron was completed on or about June 18, and preliminary attempts were made to obtain a high energy proton beam. Unfortunately, oil vapor from the diffusion pump was admitted to the accelerating tube of the Van de Graaff Generator on June 27. Contamination was so severe that the accelerating tube has had to be replaced. Conditioning of this new tube will begin the latter part of this week, and it is expected that test operation of the Cosmotron will be resumed shortly after the July 4 holidays.

In the meantime the shielding is being replaced. The South Straight Section is much better shielded than ever before. The grouting of the floor permits a loading of six tons per square foot. Iron shielding plates from Oak Ridge are also being installed. Several bubble chambers are being tested so as to be in readiness for experimental runs. Improvements are being made to the radio-frequency system, the magnet cooling system, and in the motor generator room.

60" Cyclotron

A two-week shutdown period had to be scheduled during the past month in order to repair a shorting bar and a diffusion pump. Three or four additional days may be needed because of difficulties experienced in welding on the pump. Except for these repairs the Cyclotron has been operated satisfactorily for the use of the Physics and Chemistry Departments, for Princeton University, and in connection with a joint project involving the Medical Department, Mt. Sinai Hospital, and Johns Hopkins University.

18" Cyclotron

Lack of stability in the oscillator radio-frequency has been a nuisance and in some instances the source of error in measurements. To improve matters in this direction, the machine has been opened and the copper liners over the pile tips fastened in a large number of places. The heating of these liners and attendant mechanical warping during operating changed the dee to ground capacity, and therefore the frequency. A new circuit was also incorporated into the control system to stabilize automatically the oscillating frequency. These modifications have resulted in a marked improvement in the energy stability of the machine. Measurements indicate that the proton energy variation is now only about ± 9 kev at 3 mev. Other improvements during the shutdown were also introduced with the result that a focused beam of 100 μ a is available, as compared with 50 to 60 μ a previously.

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Contract Actions

A letter contract between Babcock and Wilcox Company and Union Carbide Nuclear Corporation for LMFRE consulting services was signed and approved by AEC. Negotiations between the two companies are continuing with indications that a definitive will be signed before September 30.

A change to the Brookhaven National Laboratory financial plan was requested during the early part of the month. From all indications year-end cost for the entire Laboratory will be approximately \$400,000 under the cost ceiling. The changes requested are as follows:

Reactor Development Program	- \$400,000
Physical Research Program	- \$100,000
Biology and Medicine Program	+ \$100,000
Net Total for the Laboratory	- \$400,000

Summer Program

The usual influx of visitors who will work at the Laboratory this summer has occurred. There will be over 250 in all.

Summer Student Program

Applications for this program were received from:

90 graduate students from 47 universities

336 undergraduate students from 102 universities

Appointments were awarded to:

41 graduate students from 24 universities

63 undergraduate students from 37 universities

80 of these appointments were accepted, as follows:

35 graduate students from 20 universities

45 undergraduate students from 26 universities

or, 80 students from 40 universities

In addition to the above about 12 graduate students have been appointed as research assistants.

Radiological Physics Fellows

Twenty-four AEC Radiological Physics Fellows are at the Laboratory for the usual nine weeks of field experience following an academic year's course at the University of Rochester.

Research Participation Program

One hundred scientists and engineers from 56 different universities, including four foreign universities, together with five from non-university research centers, are either here or will be here to engage in research programs with the Laboratory's facilities.

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The Summer Institute in Nuclear Science and Engineering

Thirty faculty members from 28 different engineering schools reported July 1 for an eight-week course in the general field of nuclear engineering similar to that given in the summer of 1956. This summer institute is being sponsored by the Atomic Energy Commission and the American Society for Engineering Education. Five scientists and engineers from other universities have been given temporary appointments and will assist in the instruction given in this institute.

Research Reports

During this period twenty papers were approved for publication. This number included eleven on physical sciences, three on applied sciences, and six on life sciences.

Visitors

The Laboratory was visited by the following, among others:

- 12 New York University post graduate students, on May 28.
- 16 County Agricultural Agents of Southeastern New York, on June 3.
- 30 members of a course given at the Queens Hospital Center on the Medical Uses of Radioactive Isotopes, on June 4.
- 14 officers from U. S. Naval Air Development Center, on June 10.
- 108 members of the Society of Tool engineers, on June 15.
- 25 individuals attending a meeting of the Subcommittee on Acute and Chronic Effects of Atomic Radiation, on June 15.
- 19 members of the Indonesian Parliament, on June 21.
- 50 doctors taking a special course in Radiation Therapy at Columbia University, on June 25.
- 14 nurses from Creedmoor State Hospital, on June 26.
- 64 members of the American Public Power Association, attending their annual meeting in New York City, on June 28.

In addition to the above there were 103 scientific and technical visitors from other countries during this report period.

The Fifty Annual Naval Reserve Nuclear Sciences Seminar was held at the Laboratory May 26 - June 8 on the general subject of "Life Sciences and Atomic Energy." Fifty-eight officers from the Navy and Air Force attended.

The Tenth Annual Biology Symposium on the subject of "Homeostatic Mechanisms" was held at the Laboratory on June 12, 13, and 14. Eighty-two representatives from forty-one different institutions attended.

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USDOE 001265

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE
STATUS AND PROGRESS REPORT
FOR THE MONTH OF
JULY 1957

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SECTION I

NEW YORK OFFICE

ADMINISTRATION

Administrative Operations

Property

Sea immersion activities were coordinated by the Branch for the following:

Chicago Operations Office

Pittsburgh Area Office (Westinghouse)	148.8825 tons
Chicago Area Office (Pratt & Whitney)	<u>9.45 tons</u>
Total for July	158.3325 tons

New York Operations Office

Nuclear Development Corp. of America Contract 862	4.1475 tons
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Contracts

Harvard University, Cambridge Electron Accelerator, Contract AT(30-1)-1909.

Work has begun on construction of the laboratory-control building for the accelerator project. The Headquarters' technical representative, Dr. C. E. Falk, has requested NYOO to begin preparation for negotiation of the operating contract. NYOO staff comments have been requested for Harvard's proposal for operations. NYOO referred a proposal from the Project to Research-Headquarters to extend the dates for definitive design of the magnet and the injector components. The Project issued bid invitations for four motor control units, and recommended award of an order for two electrical substations to the I. T. E. Circuit Breaker Co. at a fixed price of \$93,000, subject to an escalator clause if shipment was delayed by the Project.

New York University Computing Center, Contract AT(30-1)-1480.

The IBM-704 computer is now in operation and its first AEC customer is receiving service. Machine time is available at the rate of approximately \$450 per hour. The Manager announced availability of this service by memorandum of July 1st to all AEC operations offices and Headquarters Divisions with computing interests. The personnel for operating this equipment will be supplied by the University. The Center's technical staff is available for consultation in connection with problems of computation; and the analytical

and numerical formulation of problems. The Center's research program includes methods and codes in Monte Carlo, neutronics, continuum neutronics, reactor mechanics, accelerator design, numerical analysis; and general studies in elasticity, fluid mechanics and partial differential equations.

The modifications of other floor areas in the Computer building, to provide more space for the center, has been delayed somewhat by the cement strike in this area. The new space should be ready for use by mid-September.

Princeton University, Project Matterhorn, Contract AT(30-1)-1238.

AEC-Princeton joint negotiations have begun with Allis-Chalmers and RCA for the contract to design and fabricate the experimental Model C Stellerator device. NYOO is represented at these negotiations by the Director of Contracts and the Assistant Deputy Manager.

Princeton University Proton Accelerator, Contract AT(30-1)-1916.

Negotiations continue for the definitive contract. NYOO has submitted to Research-Headquarters the Project's request for a revision in the cost estimate and schedule for the RF power supply.

University of Rochester, Cyclotron Project, Contract AT(30-1)-875.

The construction subcontract for the elementary particle physics building was approved by NYOO and award made by the University.

Radio Corporation of America, Contract AT(30-1)-1958.

RCA's proposal to extend the term of this contract for photomultiplier tube development has been approved by Headquarters. Negotiations for the extension are in progress.

Sylvania-Corning Nuclear Corporation, Contract AT-30-1-GEN-366.

Since it has been decided not to install a plutonium laboratory for SCNC at the BNL site, SCNC has been requested to prepare the equipment purchased for this project for disposal. NYOO is informing other offices that may need special fume hoods and ventilating equipment. During the month, Sylvania gave discharge notices to a number of its staff employed on contract work.

Other.

A representative of the Contracts Division attended a meeting at Chicago, concerning fee negotiations and a proposed revision of the AEC Manual concerning overhead. The Division also was represented at the NYOO emergency relocation center during "operation alert" for this year.

Inspection Division

During the month of July, 189 10 CFR 30 (Byproduct Material) licenses, and 6 10 CFR 40 (Source Material) licenses were received for inspection. As of the end of the month, this totaled 1,401 Byproduct Material licenses, and 238 Source Material licenses: a grand total of 1,639.

Personnel

The Division Director was granted a three months leave of absence to serve as AEC representative to a special Presidential committee studying the Federal civilian personnel salary and classification structure.

Ten NYOO employees completed a six week reading improvement course conducted by the Organization and Personnel Division. Subsequent courses are planned for other employees in the fall.

Public Information

During the month of July, the Public Information Service issued one press release reporting the shipment of uranium for a reactor in Frankfurt, Germany. Special assistance was given to the Public Affairs Division of Columbia Broadcasting System which is planning a fall one-hour program on radiation and to the New York Times which is preparing a series of articles on the Sunshine Project. A meeting was held with George Glasheen of the Public Information staff in Washington and Samuel Schenberg, Science Supervisor for the New York City Board of Education, to clarify problems involved in the editing of the booklet "Laboratory Experiments with Radioisotopes for High School Science Demonstrations" now under revision.

Arrangements were completed with New York University regarding a press conference on the new 704 Computer. The press release has been written and submitted to Washington for approval and the present schedule calls for the press conference to be held early in September.

A claim of possible eye injury as a result of viewing a test detonation from a road in Las Vegas was made to the Public Information Service by a Mr. Samuel Grad of Brooklyn, New York. He was advised to consult his eye doctor who in turn could discuss his findings with Dr. Lee Farr, Chairman, Medical Department, Brookhaven National Laboratory, if there was any need for consultation. Mr. Grad himself called Dr. Farr who offered to contact a Colonel Byrne, an expert in this field. Since Colonel Byrne was not immediately available and Mr. Grad wanted to be examined as quickly as possible, he was advised to see Dr. Conrad Berens of New York City, a retinal burn expert. Mr. Grad advised the Public Information office that Dr. Berens had said there was eye damage but that he could not be certain that it was due to retinal burn. Dr. Berens sent a report to Dr. Farr indicating that in his view Mr. Grad was suffering from transient amblyopia, not associated with the test.

The Director, Public Information Service, served on the staff of the Joint Office of Test Information in Las Vegas for a period of two weeks.

A report of activities from January 1st through June 30th of the Public Information Service film library indicates that 1,724 showings were made to approximately 75,000 people. Use of these films was 3½ times greater in this six month period than in a seven month period reported in 1956.

Security

The Director, Security Division, the Branch Chief, and the Assistant Branch Chief of the Physical Security Branch met with representatives of Project Matterhorn, at Princeton, for the purpose of developing an appropriate physical security program for the Theobald Smith House, which will be used by the RCA and Allis-Chalmers group. As a result of this meeting, a program acceptable to all concerned is being established.

Technical Liaison

Wesley M. Johnson has been appointed Director of the Technical Liaison Division. Mr. Johnson transferred to NYOO from the Kansas City Area Office where he served as Manager under the Albuquerque Operations Office. The Director spent considerable time during July visiting major contractors under NYOO familiarizing himself with their programs.

The Director participated in Operation Alert at the local ERC as Operations Officer and the exercise moved smoothly.

The scientific staff participated in a review meeting at New York of various programs under the Washington Reactor Development Division. Mr. Roddis and members of his staff attended this meeting.

Access Permit Program

During July, 13 new access permits were assigned to NYOO; of these, 7 have access to Secret Restricted Data and 8 have access to Confidential Restricted Data. Three access permits have been terminated. This brings the total number of access permits to 441--233 have access to Secret Restricted Data and 208 have access to Confidential Restricted Data.

Nuclear Materials Management

1. An SS Materials survey was performed at Brookhaven National Laboratory as required by AEC Chapter 7404 SS Materials Surveys.
2. On behalf of the Division of International Affairs, Washington, a representative of this group participated in the following transfer of special nuclear material:
 - a. One shipment to the government of the Dominion of Canada.
 - b. One shipment to the government of the Federal Republic of Germany.

- c. One shipment to the government of Denmark. Since the first shipment on February 18, 1957, there have been nine overseas shipments of special nuclear material from the New York Port of Embarkation in connection with President Eisenhower's Atoms For Peace Program.
3. Two shipments of 125 fuel elements each, were sent to Brookhaven National Laboratory by Sylvania-Corning Nuclear Corporation, Hicksville, Long Island. These represent the initial shipments of the 5,000 fuel elements which are being fabricated for Brookhaven National Laboratory.
 4. Sylvania-Corning Nuclear Corporation, Plant B, Hicksville, Long Island. **Was visited by a representative of this group to inspect the performance of work pertaining to the fabrication of BNL elements.**

Construction and Engineering

1. Consultations with C. T. Main, Inc., Boston, Massachusetts, and Gibbs and Hill, New York City in connection with A/E services being furnished by these firms to the Cambridge Electron Accelerator and Princeton Proton Accelerator projects, respectively. At CEA, a contract has been awarded and construction of a laboratory-office building has begun. At PPA, bids for the construction of the administration building are scheduled to be opened during August.
2. Submission to Headquarters of preliminary plans and specifications prepared by Walter Kidde Constructors, Inc. for the development of the Model "C" Site. Consultations with Princeton personnel and Headquarters Divisions of Research and Construction and Supply concerning these plans and specifications.
3. Supervision of the activities of Lockwood Greene Engineers, Inc. in the preparation of plans and specifications for NYOO housing at 201 Varick Street.
4. Visits to 4-6 Washington Place to determine progress of construction of the IBM-704 Computer Facility.
5. Coordination and control of University and A/E activities in connection with two additional buildings at University of Rochester, both of which are now under construction.

Technical

Harvard - MIT Electron Synchrotron AT(30-1)-1909

The MkIV Magnet is being assembled for testing this fall, and final results will be used in design and construction of 102 magnets. Work on magnet coils and cooling coils is proceeding satisfactorily. At a staff meeting on July 8th, the present status of the components which will make up the accelerator was discussed at length. During the summer, technicians from nearby colleges have been working on the project.

Princeton-Pennsylvania Proton Accelerator AT(30-1)-1916

Project leaders reported on their assigned components at a staff meeting

held on July 2, at the Palmer Physical Laboratory. After contacting sources of supply of ferrite, ferroxcube was selected as having the best quality for the cost. The ferrite is to be utilized as an inductor for the RF cavities and possibly for the rotating condenser in the RF Power Supply. Probes are being developed to make static and dynamic measurements on the magnet scale model. This will assist in the final design of the magnets.

MIT - High Energy Physics (ONR-AEC)

This work is being transferred to AEC (NYOO) for administration in Fiscal '58. Periodic visits are made, since many of the projects are directly connected with the Cambridge Electron Synchrotron. Projects such as Bubble Chamber Development and Particle Physics Experiments are in progress.

Nuclear Development Corp. of America (NDA)

Much of NDA's time during July has been devoted to the preparation of annual and topical reports on the 862 draft projects. A draft of Dr. Goldstein's Shielding treatise has been submitted to Washington.

Sylvania-Corning Nuclear Corporation

Early July operation was limited due to exhaustion of funds and internal organization problems. The Bayside laboratory shut down for vacation during the last two weeks.

Aeroprojects, Incorporated

Ultrasonic breakup of large thorium bismuthide needles in liquid bismuth to produce equiaxed crystals has been successful on a laboratory scale. Brookhaven is interested in the extension of this technique to IMFRE. The compacting die used in Aeroprojects powder metallurgy work developed a crack, and a new die has been fabricated and is being heat-treated.

Princeton (Matterhorn)

A basic report, describing the Model "C" Machine (Project Sherwood) to contractors Allis Chalmers and R. C. A., is scheduled to be issued in September.

N. Y. U. (Sherwood)

Assembly of the experimental group's plasma machine has been completed. Work will begin when the machine is relocated at 4-6 Washington Square. Plasma will be generated, using Bostick ion sources and experiments will be programmed to assist the N. Y. U. theoretical group.

Operation Writer's Cramp; a series report on the work of the theoretical group since 1954 is expected to be in print early this fall.

General Electric Capacitor and M. I. T.

A meeting with the G. E. capacitor group at Syracuse and the M. I. T. dielectric materials group, was held at M. I. T. to discuss development of a high energy storage capacitor. The M. I. T. group was under the direction of Professor Von Hippel. G. E. Representative, D. Lupfer, said that the proposed ceramic dielectric, a 40% weight addition of Strontium titanate to Barium titanate, had withstood fields of 300 volts per mill without breakdown at densities of 98.7% of the theoretical densification. He felt that further densification would permit this material to quickly operate at the goal of 500 volts per mill. Both groups benefited from the meeting. Von Hippel's group confirmed many of the results arrived at by G. E. Further exchange of data and materials has been agreed upon.

M. I. T. (Plasma Physics)

Plasma are being generated in microwave cavities and energy is transferred to the electrons, utilizing the principle of cyclotron resonance. A large part of the effort involves development of diagnostic methods of studying plasma. At present, the diamagnetic effect of the plasma is being examined for the above utilization. A report on the project since 1956 has recently been issued.

Visitors to Administrative Offices

<u>Date</u>	<u>Name of Visitor</u>	<u>Staff Member Visited</u>	<u>Subject of Discussion</u>
7/8	Dr. Allen Butterworth Sr. Medical Officer Springfield UK	Eisenbud	Nuclear hazards
7/9-10	Mr. C. Vanden Bulck ORCO	Clarke	Draft AECM 9500
7/23	Prof. Bancora	Eisenbud	General discussion
7/31	Chairman Strauss	Eisenbud	General discussion

HEALTH AND SAFETY LABORATORY

Environmental Health Services

Nuclear Metals, Inc.

An air dust survey was made of the Albany Street and Hood buildings at NMI. In addition, radioactive surface contamination measurements were taken at the Hood building. All samples were below maximum allowable concentrations, and surface contamination was not significant in the areas processing radioactive materials.

Brush Beryllium, Cleveland

A decontamination survey was conducted at Brush Cleveland. Results of smear samples indicated that decontamination could be accomplished by dry wiping of contaminated areas with subsequent spray painting. These recommendations have been transmitted to the contractor.

Brush Beryllium, Luckey

A report has been transmitted to Brush covering the survey of the occupational exposure of 198 employees at the Luckey plant to beryllium dust during the week of January 21, 1957. The report noted a significant improvement at the plant and included general recommendations.

Fire and Safety

Safety and fire protection surveys were conducted at the Cyclotron Laboratory and the AEC Project of the University of Rochester and at the Sylvania-Corning Nuclear Corp., Bayside. The general condition of the areas appears to be good although minor recommendations were transmitted to the contractors. A quarterly report on these and previously conducted surveys, including a summary of the report of the committee which investigated the recent Brookhaven explosion, was submitted to the Safety and Fire Protection Branch.

Background Radiation

Preparations were continued for a trip through the western United States to obtain measurements of background radiation. Members of the Radiation Branch performed field tests of the large ionization chamber designed in HASL in the New York City area to be used on the trip. Discussions were held with members of the Division of Raw Materials concerning geological aspects of the proposed route.

Analytical Support

<u>SUMMARY:</u>	<u>RECEIVED</u>	<u>RUN</u>	<u>BACKLOG</u>	
			<u>This Month</u>	<u>Last Month</u>
Uranium				
Air Dust	949	199	833	83
Urinary	274	224	172	122
Misc.	180	14	180	14
Beryllium				
Air Dust	14	195	6	187
Urinary				
Misc.	0	43	18	61
Radium				
Urinary	16	0	16	0
Misc.	190	14	190	14
Radon	10	10	0	0
Thorium	0	0	7	7
Fluoride	0	0	18	18
Misc.	124	0	124	0
U-235- Urine	0	0	12	12
U-233- Urine	0	0	3	3
TOTALS	1757	699	1579	521

WEAPONS EFFECTS

Operation Plumbbob

Eight Laboratory personnel from the Industrial Hygiene, Radiation, Analytical and Instruments Branches participated in the fallout countermeasures and offsite monitoring projects at the Nevada Test Site during July.

The sampling and analysis of soil samples in the Sunshine project was the subject of a conference attended by the Chief of the Analytical Branch in Dr. Libby's office on July 22.

A total of 6,300 fallout samples were processed at HASL during the reporting period.

CONSULTATION, PUBLICATION AND OTHER STAFF SERVICES

Operation Alert

The Deputy Director of HASL participated in Operation Alert 1957, at the Federal Civil Defense Region 1 Headquarters, Harvard, Massachusetts.

Two members of the Radiation Branch served as damage assessment officers and AEC representatives to the Regional Mobilization Committee of Region 2 in Binghamton, New York; one member of the Industrial Hygiene Branch served in a similar capacity for the Regional Mobilization Committee of Region 3 at University Park, Pennsylvania. - 9 -

The Chief of the Analytical Branch represented HASL at the Emergency Relocation Center, Brookhaven National Laboratory.

U. N. Scientific Committee

The Analytical Branch, in cooperation with the U. N. Scientific Committee on the Effects of Atomic Radiation, has prepared strontium standards for distribution by the Scientific Secretary of the U. N. Scientific Committee to Member Nations interested in beginning strontium analyses in their own laboratories. Dr. Dan Beninsen, of the Scientific Secretary's office, was accompanied by Mr. A. Fox, photographer from the U. N. press office on July 3 and 12, to receive the standards and prepare a press release with pictures of the various steps in sample preparation.

University of Oregon

Together with Dr. Bonner, the Chief, Biometrics Branch reviewed the work being done by Dr. E. E. Osgood of the University of Oregon Medical School, Portland, Oregon, on the control of peripheral blood counts, in patients suffering from leukemia, by exposure to whole-body X-radiation or administration of P-32. In addition he consulted with them on their statistical problems.

Lithographic Film

At the request of G. V. Beard of the Division of Biology and Medicine, the Chief of the Radiation Branch investigated an inquiry received through U.S. Representative J. Harry McGregor of Ohio, from the Shaw-Barton Company of Cincinnati, regarding the possibility of fallout producing black specs which had been discovered on lithographs. No similar complaints were made by Kodak, Ansco or Du Pont. Representatives of the latter three companies indicated that lithographic film would probably be the last photographic product affected by fallout because of its low sensitivity emulsion. This information was transmitted to the Division of Biology and Medicine.

Licensing Activities

The Chief of the Radiation Branch advised Mr. Kieffer of the Sperry Company of AEC licensing requirements for obtaining irradiation services at Brookhaven for electronic components.

The Deputy Director discussed licensing procedures for handling radioactive isotopes with Mr. Vinciguerra of the State University of New York, and with Mr. Higgins of the Port of New York Authority.

At the telephone request of L. R. Rogers, Division of Civilian Application, rough radiation measurements were made of Army optical eyepieces received from the Edmund Company. Materials like these Army surplus items are at present exempt from AEC licensing provisions. The question was raised whether radiation levels were high enough to warrant licensing. Measurements

indicating levels of about 10 mr/hr at contact were reported to DCA.

Research in Japan

The Deputy Director participated in discussions with the Manager and Deputy Manager of NYOO; Mr. Saito, Member of Japanese Diet; Mr. Isawa, Interpreter; and Dr. Tajima, U. N. Secretariat, Scientific Committee on the Effects of Atomic Radiation, concerning research in Japan.

Cobalt-60 Irradiation

Copies of drawings of a cobalt-60 irradiator designed jointly by HASL and a private company several years ago, as well as other information on shielding requirements were supplied to W. J. Blair of the Hanford Atomic Products Operation.

Textbook by Dr. H. Goldstein

The Chief of the Radiation Branch recommended changes of statements regarding AEC policy and National Committee on Radiation Protection philosophy on radiation exposures in a forthcoming textbook by Dr. H. Goldstein, in a memo to A. F. Owings, Division of Information Services.

Inquiry from New Rochelle Civil Defense

A call was received by the Chief of the Radiation Branch from A. H. Brooke of the New Rochelle Civil Defense, regarding an increase in background radiation during July. He was advised that a normal instrument reading corresponding to 0.02 - 0.03 mr/hr had changed to 0.25 mr/hr on July 23.

Waste Disposal at Earle Ammunition Depot

Mr. R. Young of the Safety Office of the Picatinny Arsenal, Dover, N. J., inquired concerning radioactive waste deliveries to the Earle Naval Ammunition Depot. Young stated that a shipment from Picatinny was refused by Earle because it did not meet AEC specifications. The Chief of the Radiation Branch advised Mr. Young that these specifications applied only to an agreement between NYOO and Earle and covered only wastes produced by AEC contractors. Copies of the NYOO packaging specifications were forwarded to Mr. Young by the Property Branch, New York Operations Office.

Beryllium Control

An inquiry was received from Mr. James F. Trosch of Columbia University concerning the control of Beryllium exposures. Information concerning Industrial Hygiene and Analytical procedures of the Laboratory were furnished to Mr. Trosch.

INSTRUMENTATION

DTR System

Eight beta tape counting machines are now in stages of final test prior to release to the Analytical Branch. Of the eight units, five are completely satisfactory; the balance of three require minor circuit adjustments to insure meeting engineering specifications for this part of the system.

The central station is in final wiring form. Work is proceeding on installation of the paper tape punch which will eventually replace the direct card punch. The paper tape punch was selected finally because it has a storage capacity for 3,000 sets of data in contrast to the 500 card storage for the card punch and because the mechanical reliability is far greater. It is feasible to feed the paper tape data directly into the computer of the Alwac Corp.; if the IBM Service Bureau is used the paper tape data can be recorded on cards at minor cost.

The radon preamplifier and amplifier in transistor version are complete and ready for printed circuit layout.

Design has been started on control circuitry for insertion of dial and automatic counters into the DTR system.

Whole Body Counter

Shielding studies have been completed using steel and water. In general it is indicated that 20% of the radiation seen by sodium iodide phosphor appears in the horizontal, that 5% comes from the vertical toward the ground, and that approximately 10% comes from the ground upward.

Steel shielding cylinders six feet and eight feet long have been ordered from Idaho and should arrive during August, at which time a decision will be made on the method of final assembly. The six-foot cylinder with doors and end plug should weigh in the order of 16 tons; the eight-foot cylinder should weigh approximately 4 tons more. On this basis the long shield can be mounted either on one of the upper floors of the 70 Columbus Avenue building or in an existing small ramp area on the ground floor. Mechanical design of the shielding system is continuing.

The 4" thick by 8" diameter NaI phosphor has arrived and will be mounted on a 12" photomultiplier tube as soon as spinnings are received for assembly. Initial designs are under way for housing the tube.

Low Level Counting System

The six position geiger counter set used for strontium-90 measurements has performed reasonably well with but two minor breakdowns which were corrected

within a very short time. In the meantime a more reliable transistorized anticoincidence circuit has been completed and has been converted to printed circuit technique for fabrication.

The Libby Counter equipment has been operated for reliability checks. A steel wall tube has been installed as well as a mylar window tube. The steel wall tube is consistent at 1/2 count per minute background; the mylar window tube is inconsistent and operates with a background rate of from .4 to 2 counts per minute in a completely erratic manner. It is assumed that our technique of making contact to the aluminum on the mylar is at fault, since circuit checks reveal that the anticoincidence circuit is operating properly and that the high count is within the mylar tube. Studies are now under way to improve the contact procedure for the mylar tube.

Transistor Circuit Studies

In addition to the work described above, a transistorized binary array has been designed, checked and converted to printed circuit techniques. Based on test results, this binary circuit will be utilized in constructing the storage bank of a multichannel analyzer. It is expected, as well, that the basic blocks now designed will be applicable to several other instruments; satisfactory tests have been made of the following:

- a. A slit analyzer using the gates of the multichannel arrangement.
- b. A single channel analyzer with good stability characteristics.
- c. Scaler blocks for routine counting operations.

A passive component log count ratemeter has been constructed and completed. Its present scale range covers somewhat more than four decades; it is operated from seven EM-12 mercury cells at a drain which permits 400 hours of life it has a built-in direct reading discriminator which can be adjusted to operate from a 3 to 5 volt pulse discrimination level.

A linear ratemeter circuit based on complementary pair trigger has been tested. It has seven scale ranges from 1 through 1000 counts per second full scale. Calibration is maintained within plus or minus 5% with a battery voltage span from 4 to 6 volts.

Nuclear Safety

The following feasibility reports were reviewed and approved by the Nuclear Safety Review Board:

1. SYLVANIA-CORNING NUCLEAR CORPORATION - FEASIBILITY REPORT NO. 43, CONTRACT C-207, PHILIPS PETROLEUM COMPANY.
2. NMI-FR-9, FEASIBILITY REPORT, AND NMI-FR-9a, SUPPLEMENT, FOR THE FABRICATION OF ENRICHED URANIUM ALLOY EBR-I, MARK III, FUEL ELEMENTS.
3. AMENDMENT NO. I TO SYLVANIA-CORNING FEASIBILITY REPORT NO. 41, SPONSORED TASK FORCE C-36 (PRATT & WHITNEY), DATED JULY 19, 1957.

It was brought to the Manager's attention that Sylvania-Corning possesses a special nuclear material license, No. 82, permitting the processing of unlimited quantities of uranium of any enrichment. Such a license does not appear to afford a means for review of individual fuel processing jobs by the NYOO Nuclear Safety Review Board or anyone else in the AEC. Clarification was requested.

The Board was reorganized effective July 29, with L. Solon replacing H. Blatz as a Board member and J. McLaughlin replacing L. Solon as Secretary.

VISITORS TO THE HEALTH AND SAFETY LABORATORY

<u>Date</u>	<u>Name of Visitor</u>	<u>Staff Member Visited</u>	<u>Subject of Discussion</u>
7/1	K. Speh, W. Horvath and R. C. Bostrom, Airborne Instruments Lab.	Radiation Branch	Method of scanning microscope slides in the counting of bilobed lymphocytes as related to small doses of radiation, and studied by Dr. M. Ingram of Roch. Rochester.
7/3	K. Speh, W. Horvath and R. C. Bostrom, Airborne Instruments Lab.	Glauberan Christafano	Air sampling.
7/8,18	Dr. Dan Beninsen, U. N. Scientific Committee on the Effects of Atomic Radiation	Harley	Final edition of radiation report of U. N. Committee.
7/9	Mr. William Johnson, Wm. B. Johnson Associates, Inc.	Lough	Instrumentation.
7/9,29	Mr. Harold Smeck, N. Y. Times	Harley	Fallout measurement
7/10	Dr. Kiyoshi Kodaira, Nat'l. Inst. of Agricultural Sciences, Tokyo, Japan	Harley Hardy Hamada	Tour of HASL; soil analyses.
7/10	Mr. B. Miller, Henry W. Smith Co.	Weinstein	Hoods and dry boxes
7/10-12	J. Kelly, DMA; Don Gale and Mr. Omohundro, NRL	Solon	Interagency training program.
7/11	Dr. Norton Nelson, NYU-Bellevue Medical Center	Lough	HASL-NYU relationship.

<u>Date</u>	<u>Name of Visitor</u>	<u>Staff Member Visited</u>	<u>Subject of Discuss:</u>
7/19	Lt. E. Epstein, NYC Police Dept.	McLaughlin	Training and equipping members of NYCPD as radiological surveyers; permissible levels recommended by NCRP; survey instrumentation.
7/23	Dr. Dan Beninsen, U. N. Scientific Committee	Harley	Strontium standards
7/23	Lt. Bower, U. S. Army	Glaubergerman	Beryllium hazards.
7/24	Mr. Martin Oulton, Army Signal Supply Agency, Philadelphia, Pa.	Lough	Availability of radioactive material for large-scale production of radioactive batteries. Referred to Division of Civilian Application.
7/25	Dr. Herbert Volchok, Isotopes Inc.; Dr. Paul Kruger, Nuclear Science and Engineering Corp.	Harley Whitney	Status of samples under strontium contracts.
7/31	Dr. Charng Ratanarat, Thai Atomic Energy Committee for Peace, Miss Choruni Ratanarat, Maj. Gen. Sathit Vladyasastre, Rear Adm. Sombandhu Bonnag	Lough Harley	Tour of HASL and discussion of fallout collection methods.
7/31	Dr. Masashi Suzuki, Tokyo, Japan	Whitney Harley	Tour of Laboratory and discussion of analytical procedures.
7/31	Dr. T. D. Benjamin, Instructor, Teaching of Science, Columbia University and 15 students	Lough and HASL staff	Tour of HASL.

SECTION II

BROOKHAVEN NATIONAL LABORATORY MONTHLY STATUS AND PROGRESS REPORT FOR JULY, 1957

BROOKHAVEN AREA OFFICE

CONSTRUCTION PROJECTS

Alternating Gradient Synchrotron

Re-evaluation was forwarded early in July to the Washington office. The revised curves for the Construction Status Report have been developed and are to be forwarded early in August.

AUI subcontract for the Magnet Cores was approved by the AEC as were subcontracts for the Magnet Coils and the Target Building Shielding Blocks and purchase order for the RF Ferrites.

During the month floor slabs in the Magnet Enclosure, Linac Tunnel and Target Building were completed as was the siding on both the Linac and Target Buildings. Roof is substantially completed on the Linac Building and 60% complete on the Target Building. Fifteen Special Pile Caps were poured, bringing the total to 106 out of 120. Two large retaining walls at the end of the west experimental area were poured. Painting was completed in the Magnet Enclosure and Access Tunnels. Electrical work consisted of the hanging of all fixtures in the Magnet Enclosure, placing wireway trays and conduit and pulling wires. Erection of duct work was started and the running of steam and chilled water mains neared completion. Fabrication of special aluminum piping for the Magnet Cooling System was begun in shop. Eight-inch fire main to Linac Building was completed.

Trade union and cement workers strike reduced general contractor's work force from an average of 172 men in June to 136 in July. At one point the general contractor laid off all carpenters, laborers, and other cement trades in anticipation of a teamster's strike. This situation was quickly righted under pressure of Stone and Webster and Brookhaven National Laboratory. General contractor's work advanced only 8% during the month as contrasted with 12 - 15% in previous months. Work on the diffusion basins was substantially completed, and the well contractor completed the second test well and began work on one of the main production wells.

18" Cyclotron Building

During the month of July the A/E mailed plans and specifications to approximately thirty construction contractors.

UNCLASSIFIED

Hot Laundry and Reclamation Facility

During the month of July Title I work was reviewed by AEC and BNL and was returned to the A/E to make the necessary changes.

Medical Research Center

This job is now 37.2% complete. During the month the Hot Source Area walls were poured and stripped. Formwork for the Reactor floor slab was completed, and reinforcing steel and utilities were being installed in the forms.

The structural steel contractor has substantially completed erection in the laboratory sector. The built-up roof was completed in the hospital sector. The masonry contractor continued laying out partitions throughout the project.

The installation of electrical, plumbing, sprinkler and HVAC utilities were continued in all areas as were the pipe insulation and HVAC instrumentation. Strikes held up the HVAC piping for about one week and the sheet metal work for approximately two weeks.

Daystrom has substantially completed fabrication of all parts of the Reactor.

CONTRACTS AND CONTRACTORS' ACTIVITIES

AUI Prime Contract, AT-30-2-GEN-16

A draft of the AUI definitive contract for the operation of Brookhaven National Laboratory was forwarded to the contractor. The draft covers the extended period July 1, 1957, to June 30, 1962, with an option to renew for an additional five years.

Industrial Safety Program

A BNL organizational change has been put into effect which combines the industrial and radiation safety programs. By this means health physicists would become more alert to industrial safety problems and industrial safety would get more consideration through the presence of additional safety minded people on the site. A new safety engineer has also been appointed.

RESEARCH FACILITIES

Cosmotron

The damage to the Van de Graaff generator reported last month has been repaired. It is now injecting into the Cosmotron 4 to 6 milliamperes of protons, 2 to 3 times greater than before shutdown.

UNCLASSIFIED

The Cosmotron has been producing a beam of protons at 3 Bev during the past week. However, the beam intensity has only been about 5×10^9 protons per pulse, as compared to 10^{11} protons per pulse anticipated. Consequently, daytime operations are now being devoted to seeking the source of the proton loss. From 4:30 until midnight the machine is being operated for research purposes.

The shielding is in place except for a portion containing iron plates which might disturb the magnetic field in the gap of the Cosmotron. Experimental equipments have been assembled, placed in position, and given preliminary tests.

18" Cyclotron

Most of the past month has been spent in getting a track fabricated and installed, so that the carriage for the neutron-detector shield can be moved without disturbing the line-up from the detector to scatterer. It was found to be impractical to adjust the floor of the existing wooden platform precisely enough to maintain proper detector positioning for all azimuthal angles in a semi-circle about the scatterer. A semi-circular tract was fabricated from 1" steel plate. By supporting it from the concrete floor with a number of jacks, it has been possible to level the entire 190° of track to within a few thousandths of an inch.

For the first time this Cyclotron has been operated for a research project from the Medical Department. It involved the irradiation of a group of mice with neutrons.

60" Cyclotron

Repairs to the machine required that tubes be replaced. They had been in continuous service since September, 1953, and were not new at that time. Maintenance time required during this report period was $3\frac{1}{2}$ days. Otherwise, the Cyclotron has been operated on a schedule of about 60 hours/week for research by the Physics, Chemistry, and Medical Departments, and for groups from Princeton University and the University of Pennsylvania. Other projects include those jointly sponsored by the Laboratory and the following institutions: Columbia University, Yale University, and Johns Hopkins University and Mount Sinai Hospital.

SCIENTIFIC ACTIVITIES

Experiments to Determine the Relative Biological Effectiveness of Fast Neutrons to Produce Acute Lethality in Mice

A number of scientific investigators have performed experiments to determine the relative biological effectiveness (RBE) of fast neutrons to produce acute lethality in mice. Conflicting values have been reported, ranging from 1.5

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to 5.0. An investigation intended to throw more light on these discrepant results has recently been completed. Measurements have been made of the doses of X rays and neutrons required to produce a lethal effect of 50% in 30 days in female mice. Two hundred and fifty KVP X rays were used. The fast neutron irradiations were performed with the fission neutrons produced in a U-235 converter plate placed in the thermal column of the Brookhaven reactor. Tissue equivalent ionization chambers were employed to measure the neutron dose. The X-ray LD_{50/30} dose was determined to be 636 rad, and the neutron dose, 366 rad, giving an RBE of 1.7. This confirms the low RBE values obtained by other investigators at the Oak Ridge, Los Alamos, and Naval Radiological Defense Laboratories, and indicates that there is no difference between cyclotron pulsed neutrons and continuously produced neutrons from a reactor in producing a lethal dose of 50%. (Biology Department)

Degradation of Organic Acids to Determine the Distribution of Isotopic Carbon

Procedures have been devised for the degradation of organic acids to determine the distribution of isotopic carbon in the original compounds. The procedures consist of performing the appropriate chemical reactions *in vacuo*, and subsequent collection of the various fragments in a form suitable for direct and reliable isotope assay. The method offers the advantages of high precision, and freedom from outside contamination. (Chemistry Department)

Prevention of Thrombocytopenic Purpura Produced by Whole Body Irradiation

The prevention of thrombocytopenic purpura produced by whole body irradiation can be prevented by transfusion of fresh platelets. In recent experiments the survival, distribution, and fate of platelets transfused into the irradiated thrombopenic rat were studied, using the radiosulfur platelet labeling method of Odel et al., and appropriate counting and high-resolution autoradiographic techniques. A potential mechanism of platelet hemostatic activity has been demonstrated. Historadioautographs of tissues of irradiated thrombopenic rats sacrificed one hour after transfusion of "homozygous" platelets in number sufficient to raise the circulating platelets levels from 5000 to $1.5 \times 10^6/\text{mm}^3$ strongly suggested that either intact platelets, or radiosulfur-labeled material from the platelets adhered to and lined the thrombopenic endothelium. In rats sacrificed four days after transfusion, the radiosulfur activity was found almost exclusively in the splenic macrophages. The survival times of platelets in the normal and irradiated rats were indistinguishable, approximately four days. Definitive interpretation of the adherence to capillary endothelium at 24 hours of the radiosulfur-labeled material involves mathematical considerations of the resolving power possible with S^{35} beta particles (0.165 Mev). It is believed that the thrombopenic endothelium has selectively taken up the radiosulfur-labeled material of the platelet, or perhaps the intact platelet. Whether this means that platelets contribute some sulfur-rich macromolecular substance (presumably an acid mucopoly-saccharide) that is essential for small vessel integrity, or whether platelets play a more secondary role by initiating fibrin formation at a submicroscopic level is a matter for conjecture and further investigation. (Medical Department)

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Existence of Isotopes Produced by Spallation in Meteorites

The existence of isotopes produced by spallation in meteorites has been well established by the measurements of a number of investigators on the content and ratios of the isotopes found in these meteorites. Little work, however, has been done on the depth variation of the spallation isotopes. Such studies should give information on the energy of the incident cosmic rays and on the ablation of material from the meteorites during their passage through the atmosphere. For these purposes the H^3 produced by 0.16, 1.0, 3.0, and 6.2 Bev protons and the A^{37} by 0.16, 1.0 and 6.2 Bev protons in long iron targets has been measured as a function of depth. The maximum effective H^3 cross-section found is 7.2 mb at 0.16 Bev, 60 mb at 1.0 Bev, 100 mb at 3.0 Bev, and 130 mb at 6.2 Bev. The maximum effective A^{37} cross-section is 0.19 mb at 0.16 Bev, 4.7 mb at 1.0 Bev and 6.7 mb at 6.2 Bev. The depth variation of these isotopes is quite energy-dependent. At the higher energies a small transition effect occurs. At the lower energies there is an exponential decrease with depth. The comparison of these measurements with the depth variation of He^3 in the Carbo meteorite indicates that the cosmic rays that produced the He^3 in this material were very similar to the protons with 6 Bev energy. The H^3 to A^{37} ratio is not very energy- or depth-dependent. The ratio is 15 at 1 Bev and 20 at 6.2 Bev. However, for 0.16 Bev protons the H^3 to A^{37} ratio increases from 40 to 1000 in 4 cm depth. The H^3 to A^{37} ratio has been compared with the He^3 to A^{36} ratio found by other investigators in four iron meteorites. The small variation of the He^3 to A^{36} ratio in meteorites is believed to be related to the fact that the H^3 to A^{37} ratio is not very energy- or depth-sensitive for protons in the Bev range, and the He^3 to A^{36} ratio also favors the 6 Bev irradiation. (Visiting Scientists in the Physics Department)

Liquid Metal Fuel Reactor Experiment
(Babcock and Wilcox Company)

The Babcock and Wilcox Company reported the following progress on the Liquid Metal Fuel Reactor Experiment:

Preliminary conceptual work has been initiated on a control rod system and a wet core-sample transfer mechanism.

An alternate scheme for the remote maintenance of the LMFRE has been prepared.

A test procedure has been developed which will permit the creep-rupture testing of Croloy 1-1/4 and Croloy 2-1/4 materials in liquid bismuth.

A spectrographic method is being developed for determination of rare earths in thorium and zirconium and magnesium in bismuth.

Initiated work regarding experimental facilities in the LMFRE reactor. Data for shielding calculations is being accumulated. Developing ways and means of inserting and removing direct immersion core samples.

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Reached agreement with BNL that their loop "N" would provide much of the data on chemical processing required for the LMFRE.

A preliminary test program was written for the BNL 4" utility test loop from the standpoint of B & W requirements. A preliminary review of the loop and an operational cost estimate were made.

The proposed graphite research and development program has been submitted to the Production Planning Group for ultimate transmittal to the various graphite vendors.

The specification for LMFRE Reactor and System analogue studies was discussed with interested vendors. All proposals should be received by the first of next month. The vendor will be chosen and preliminary subcontract negotiation should commence by August 1.

The various factors that enter into the estimate of 41.3 inches as the diameter of the reference design core have been analyzed for sources of error. The maximum reasonable error in this calculation is ± 5 inches. This margin of uncertainty will be reduced as more is learned about the properties of the graphite to be used in the actual reactor and a critical experiment is run.

Four test loops of Croloy 2-1/4 are under construction. Two of these have been normalized and tempered, and two have been fabricated from the mill annealed tubing and stress-relieved. The two normalized and tempered loops are in place now and are being leak tested, fitted with heater wire and copper tubing to the instruments, sampling pots and the gas pressure regulators. Fabrication of the other two loops is nearing completion.

Billets, required for the plate to be used in the next four test loops (Croloy 1-1/4), have been flattened, rolled and heat treated. Sufficient tubing to fabricate four Croloy 1-1/4 loops of normalized and tempered material has been sent to Barberton for this heat treatment. Of the next four loops, two will be fabricated from mill annealed tubing and two from normalized and tempered tubing. Construction of the mill annealed loops is under way.

A completely new Croloy 2-1/4 utility test loop has been installed. The original pump with the variable speed pulley has been replaced with the newer design pump utilizing a variable frequency generator outfit. This allows the pump motor speed to vary from about 600 rpm to 1800 rpm, which also varies the bismuth fluid velocities in the test loop. The loop has been leak tested and is ready to be chemically cleaned internally.

Research Reports

During this period twenty-four papers were approved for publication. This number included fourteen on physical sciences, eight on life sciences, and two on applied sciences.

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VISITS

The Laboratory was visited during this period by the following, among others:

Fifty-seven delegates of the 16-nation working group which had under consideration the establishment of a Regional Nuclear Center in the Philippines visited the Laboratory July 9 - 12. This group first convened in Washington on July 8. Working papers covering the scientific and technical aspects of their discussions, as well as annotated agenda had been prepared by the Brookhaven staff. Dr. Haworth served as Senior Scientific Advisor to the group in their deliberations. Their visit to Brookhaven was arranged in order that they might obtain a first-hand acquaintance with a cooperative nuclear research center, its facilities and operations. The group reconvened in Washington on July 15 for the final week of their discussions pertaining to the establishment of an Asian Nuclear Research Center.

The sixteen nations of this working group, which are also members of the Colombo Plan Consultative Committee are: Australia, Burma, Cambodia, Canada, Ceylon, Great Britain, India, Indonesia, Japan, Laos, New Zealand, Pakistan, Philippines, Thailand, Viet-Nam, and the United States.

Three Ordnance Engineering Officers, postgraduate students, from the Department of the Navy, on July 11.

Twenty-five teachers attending Workshop for Science Teachers at the University of Connecticut, on July 15.

Sixteen Christian Brothers attending courses at the Catholic University of America, on July 24.

UNITED STATES ATOMIC ENERGY COMMISSION

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

AUGUST 1957

Prepared by the Staff of the New York Operations Office

September 24, 1957

USDOE 000445

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SECTION I

NEW YORK OFFICE

CONTRACT ADMINISTRATION

Columbia University

NYOO is assisting in closing out the Minerals Beneficia-
tion Laboratory administered by the Division of Raw Materials.
During August, Contract representatives of Columbia Univer-
sity, A. U. I. and New York University visited this Labora-
tory to select excess property needed for their work.

Harvard University, Cambridge Electron Accelerator,
Contract AT-30-1-1909

Progress on construction of the laboratory-control building
is good. The basement floor slab has been poured, and the
mold and reenforcing steel is in place for the basement walls.

Building complex design is about 95% complete and completion
is scheduled for August 31, 1957. Machine design has been
delayed slightly due to the vacation period. The Project's
request for approval to purchase in advance four motor con-
trol centers at a fixed price of \$10,825, almost \$2,000
under the cost estimate, was referred to the Division of
Research. The Project's request for advance purchase of sub-
station equipment was also sent to Washington for approval.
The Deputy Manager approved the Project's order for 400 tons
of steel from Armco Corporation for the magnet at a price of
\$152,000.

The Property Management Branch arranged for the Project
Machine Shop foreman to visit the Brooklyn Navy Yard to look
over the excess tools and materials.

Items ordered in advance of the construction phase of the
work now total \$650,000.

The Project's subcontract for architect-engineer services
was modified to add \$30,000 to the estimated costs, with no
increase in fee.

Negotiations for the operating contract are planned to begin
after the Division of Research has reviewed and worked out
with Harvard-Massachusetts Institute of Technology and the
Cambridge Electron Accelerator Project the division among
them of AEC supported high-energy physics research.

Lockwood-Greene, Contract At-30-1-2046

This firm is the architect-engineer for title I work connected with preparation of space at 201 Varick Street in New York to which NYOO will move in 1959. The title I work is virtually complete, except for revisions required by changes in the space assignment from GSA. The title II and title III work of detailed design and construction will be performed by GSA.

Massachusetts Institute of Technology

Acting upon informal information that the Joint Committee had agreed to waive the waiting period involved in the loan of fuel and waiver of related charges for the MIT reactor, NYOO arranged with Oak Ridge for the immediate release of five kilograms of fuel. It was shipped to Sylvania Corning Nuclear Corporation for fabrication. Since most of the contractual arrangements have already been reviewed by both the Institute and the Technical Assistance Branch of Reactor Development, it is expected that the only point requiring detailed negotiation by NYOO will be the method of payment to the Institute for fabrication costs.

New York University--AEC Computing and Applied Mathematics Center, Contract AT-30-1-1480

Renovation of the building furnished by the University to provide space for related Project Sherwood work should be completed during September. Both the UNIVAC and the IBM 704 have significant blocks of unused time. Of 552 hours available time for the UNIVAC during July, 123 hours were idle; for the IBM 704, of 135 hours available, 24 were idle. NYOO has made allocations of time to various AEC users, but actual problem assignments have lagged.

Nuclear Metals, Inc., Contract AT-30-1-1565

Nuclear signed modification nine to the contract and thereby became an independent research and development organization rather than an operator of a government-owned laboratory. Nuclear will be allowed use of the old Hood Building and space at 224 Albany Street in Cambridge for contract and private work while its new laboratory building is under construction. Nuclear reports that ground will be broken the week of September 9th. The long term benefits to the Commission are twofold. First, it will be relieved of responsibility and costs for sustaining operations of an important laboratory. Second, the work will benefit by transfer from ancient and make-shift quarters into new and modern facilities

specifically designed for the operations involved. The Commission also will recover its investment in equipment.

Princeton University, Project Matterhorn, Contract AT-30-1-1238

The Manager reported to the Director of Reactor Development his analysis of the question of whether the contract with Allis-Chalmers and RCA should be an AEC prime contract or a Princeton subcontract. His review reflected relevant AEC experience at Brookhaven and his recommendation was that negotiations should proceed toward a subcontract.

Princeton continued negotiations with Allis-Chalmers and RCA for a subcontract to design and fabricate the experimental Model C Stellerator device. NYOO is represented in these meetings. The immediate objective is a letter contract for a three months study by Allis-Chalmers which will provide a definitive statement of the scope of work for the subcontract and which also would serve as a basis for fee negotiation. Separate meetings are also being scheduled with Allis-Chalmers to review personnel policies, procurement policies and practices, and accounting principles.

The University has begun to strengthen its administrative staff for the Matterhorn work. In August the Project Business Manager, Mr. Robert Von Verdo reported for duty. Formerly he had served as administrative officer of the electronic research laboratory at Columbia University. The master plan and preliminary design for buildings and utilities have been approved by the Division of Construction and Supply and the Division of Research; authorization from the Division of Reactor Development for detailed design is now awaited.

Walter Kidde Constructors continued architect-engineer work for the immediate construction of buildings and site development for the Project. The total space for immediate construction is about 54,000 square feet. This includes 30,000 square feet for the laboratory building, 7,200 for administration, 2,500 for cafeteria, 3,600 for shops, garage and firehouse, 10,000 for warehouse. A press release, prepared by Walter Kidde, announcing award of this contract to them was approved for release.

Princeton University, Proton Accelerator, Contract AT-30-1-1916

Princeton and NYOO reached agreement on the terms for the definitive contract. The last open item, overhead, was resolved when the University accepted the Manager's proposal for a provisional overhead rate of 53 percent of salaries and wages. NYOO intends to discuss the overhead with the

Navy auditors to reconcile differences in the interpretation of the "Blue-Book" formula for determining university overhead rates. On August 23rd the Project opened bids for construction of the Administration and Service Building. Thirteen bids were received which ranged from a low bid of \$686,700 by the Belli Company to a high bid of \$802,000. The Project architect-engineer, Gibbs and Hill, Inc., investigated the Belli Company, found uniformly favorable reports, and recommended award. The government estimate for the job was \$748,972. Princeton in turn requested AEC approval for award to Belli on August 30th. Division of Research approval for this construction, required by the staff paper on the accelerators, will be requested shortly.

During the month, with Division of Research approval, Princeton was authorized to start procurement of steel for the magnet. At the request of the University, the Property Branch entered into negotiations (through the Special Assistance Branch, Division of Construction and Supply, Washington) with the Department of the Navy (BUORD AND BUSHIPS) to acquire parts from a six inch gun turret from the USS "Topeka" to be used for a rotating shield for the proton-synchrotron. A meeting arranged at the New York Naval Shipyard on August 23, 1957 was attended by representatives of BUSHIPS, New York Naval Shipyard, Princeton University, Gibbs-Hill, Inc., NYOO Technical Liaison Division and Property Management Branch.

It was agreed that NYOO would formally request BUSHIPS to provide a cost estimate for removal of the turret parts from the ship, packaging for shipment, shipment and technical assistance during reinstallation to assure satisfactory operability. A formal request was made on August 27th.

On August 12th, a meeting was held at the New York Naval Shipyard to discuss possible acquisition of approximately 4,500 tons of steel scrap to be used for shielding for the proton-synchrotron. No definitive commitment could be made, but it was indicated that NYOO can formally request acquisition when scrap is available. The Property Branch also arranged, through the General Services Administration, to acquire 110 tons of steel scrap, without reimbursement from the Frankford Arsenal, Philadelphia, Pennsylvania. Arrangements are now being made for the shipment of this material.

University of Rochester, Cyclotron Project, Contract AT-30-1-875

Construction continues on the elementary particle physics building and the additional laboratory space. The former is now about ten percent complete and should be complete by mid-February 1958. The latter is about eighty percent complete.

Sylvania-Corning Nuclear Corporation, Contract AT-30-1-GEN-366

During the month, the Contracts Division, in collaboration with the Technical Liaison Division and the Health and Safety Laboratory, began to gather information about the explosion at Sylvania on July 2, 1956, for use by the Government in defense against the damage suits brought against the Government by those injured. Sylvania has been requested to provide a substantial amount of additional detailed information about the project involved, its history, origin, processes, and so on. Declassification of pertinent records and reports in connection with the litigation is nearing completion.

Yale University, Contract AT-30-1-1691

Construction stage of the Heavy Ion Linear Accelerator at Yale University is substantially completed.

Educational Grants Program

A representative of the Contracts Division attended the briefing session called by the Director of Reactor Development during the week of August 26th to review this program and to prepare to decentralize it to the field.

CIVILIAN APPLICATION AND INSPECTION

Access Permits

The summary of Access Permits issued to NYOO through August 31, 1957 is as follows:

New Secret Permits issued	1
New Confidential Permits issued	<u>3</u>
Total New Permits	4
Permits terminated	0
Permits expired	2
Permits converted from Confidential to Secret	1
Total Permits	<u>443</u>
Confidential-Restricted Data	<u>208</u>
Secret-Restricted Data	235

During the month of August, 14 initial inspections of Access Permit facilities were made; 184 QX clearances and 119 LX clearances were granted to Access Permittees.

The Division of Reactor Development has decided to centralize in the NYOO responsibility for administration of all

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT
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SECTION I

NEW YORK OFFICE

CONTRACT ADMINISTRATION

Boston University

Dr. F. Marott Sinex, newly appointed Chairman of the Department of Biochemistry of Boston University and formerly of the Brookhaven National Laboratory, visited NYOO to discuss University-AEC relationships and several pending contracts in his Department.

Harvard University, Cambridge Electron Accelerator,
Contract AT[30-1]1909

Accelerator groundbreaking ceremonies took place on November 5th. President Killian of Massachusetts Institute of Technology and President Pusey of Harvard presided, stressing the joint nature of the undertaking. The Project Director, Dr. Livingston, explained that the machine would be made available to faculty members and research students at both institutions. It will also be utilized by other colleges and universities.

NYOO requested the Division of Construction and Supply to review and make comments on a draft subcontract with the Cambridge Electric Light Company submitted by Harvard. Initial average power is estimated at 550 KVA with a peak of 1600 KVA. Assuming later, two-shift operation, this is expected to increase to 2,500 KVA average, and a 4,500 KVA peak by 1961.

NYOO met for a second time with Harvard for negotiation of the operating contract. By the end of this meeting the only open items were overhead, indemnification from radiation hazards, and clearance of reports for foreign patent protection. The NYOO Director of Budget and Finance has begun a review of the University overhead with the Navy Cost Inspector in Cambridge. The University is to submit its views on indemnification for radiation hazards. NYOO is exploring the workings of AEC requirements for foreign patent protection.

By the end of November, Harvard had received bids for construction of the remainder of the buildings for the Project. Of nineteen invitations issued, there were ten responses. Bids ranged from the acceptable low bid of \$1,188,000 to a high of \$1,348,568.

The architect-engineer had estimated \$1,306,000 as the average bid estimate and \$1,155,000 as the low bid estimate. Harvard recommended award to the low bidder, the S & A Allen Construction Company of Boston, Massachusetts, and the Manager approved this subcontract after it had been reviewed and approved by the Contract Review Board. Construction should start within two weeks and is scheduled for completion March 1, 1959. Harvard also requested an increase of \$26,000 for the architect-engineer subcontract. This is now under review.

The construction of the Laboratory-Control Building is continuing at a satisfactory rate. All concrete work has been completed. The brickwork has been raised to the second floor sill height on the back and east ends of the building. There have been some delays on the west and the front, but a considerable amount of mechanical work has been done. The air conditioning equipment, which was ordered in advance, is in place in the basement and the heating and air conditioning ducts are being installed.

Inter-American Institute for Agricultural Research,
Contract AT[30-1]2043

NYOO has arranged for shipment of the 200 curie gamma irradiation source to the Institute at Turrialba, Costa Rica.

Massachusetts Institute of Technology

Reactor Material Loan Contract: NYOO continued drafting a contract to lend fuel and heavy water for the Institute's research reactor, and to pay for fabrication cost of fuel elements. The Institute received 10,000 pounds of heavy water for the moderator, which is in storage.

Copies of the Institute's contract with the American Car and Foundry Company for the reactor, and the ACF-Sylvania Corning Nuclear Corporation subcontract for fabrication of the active part of the fuel elements have been obtained. Reimbursable costs of fabrication must be precisely defined.

High Energy Physics Research: The Division of Research informally requested NYOO to begin negotiation of a contract for support of all high energy physics work at MIT. This would transfer the work now going on for the Navy and the Commission under an ONR contract, to an AEC contract. The annual operating level would be in excess of 1.5 million dollars for the AEC and the Navy combined.

Master Contract: The drafting of a master contract continues. Current Institute contracts contain a provision for transfer of the work from individual contracts to the master contract once it is ready.

Property Management: A meeting was held with the Division of Industrial Cooperation, MIT, to discuss their responsibilities for the acquisition, utilization and disposal of excess personnel property. NYOO wants the Institute to undertake more responsibility in this field.

National Academy of Sciences, Atomic Bomb Casualty Commission,
Contract AT[49-1]GEN-72

During a recent ceremony, President Morito of the University of Hiroshima Medical School said that he hoped to cooperate with the Atomic Bomb Casualty Commission, and to reorganize the Medical School into a new medical center.

New York University, AEC Computing and Applied Mathematics
Center, Contract AT[30-1]1480

Means of financing the operation of the recently installed IBM 704 Computer have been under consideration by Washington since October. The University proposes that all operating costs be financed through the NYOO contract, and that no charges be made by NYU to AEC customers. NYOO met with the University on November 12th to negotiate a settlement of overhead for fiscal years 1954 and 1955. NYU still feels that the rate developed by the Army Audit Agency should be used. NYOO is continuing investigation to determine the rate which would represent the actual cost for these years.

The contract statement of reimbursable personnel costs was entirely revised and the new version agreed upon by NYOO and the University.

Nuclear Development Corporation of America, Contract AT[30-1]862

As part of the close-out for this contract, the actual overheads for periods following April 1, 1956 have to be negotiated. The contractor has submitted its closing inventory of AEC equipment, and NYOO is reviewing this. Once the inventory has been reconciled, the administrative responsibility for the equipment will be transferred to the Schenectady Operations Office as requested by the Director of Reactor Development. Meanwhile, NDA has use of this equipment for work for Schenectady.

Nuclear Metals, Inc., Contract AT[30-1]1565

Negotiations continue to settle the final "use-charge" for the two and a half years ending December 1956. The overhead for the four semi-annual periods ending December 1956 was agreed to, and will be incorporated in the contract. The new President of Nuclear visited the Research Division to discuss the AEC philosophy of expecting joint participation or waiver of fee for AEC sponsored basic research work.

Princeton University, Project Matterhorn, Contract AT[30-1]1238

Construction: On November 18th, Walter Kidde Constructors, Inc., the architect-engineer for the site development and general purpose buildings for the Model "C" Stellerator, issued bid invitations for the construction of the first phase of the Matterhorn building complex, known as phase 1a. These bids for construction of an office and laboratory building, cafeteria and warehouse were sent to 34 general contractors and are due back by December 16th. The Manager appointed a panel to select the architect-engineer for the construction of a power house, substation and housing for the device. They considered 68 possible firms, and invited proposals from 18. Final selection is scheduled by December 20th. A Contract Board has also been designated to negotiate the contract for work to start in January 1958.

Power: NYOO and Princeton are exploring the possibility of supplying electricity, by means of a new 132/26 KV substation, for the Model "C" Stellerator and the Princeton Proton Accelerator at the Forrestal Research Center.

Contract: An overall contract revision is in process by NYOO because there has been a change in the nature of the work. The University has requested a number of contract changes which are being reviewed by the Chief of the Thermonuclear Branch, Research Division, and by NYOO.

The question of a thirty-year lease to the Commission for the Model "C" site was considered. There was preliminary agreement to issue a contract modification requiring the University to provide a lease, if at any time, Princeton is no longer operating or constructing the Model "C" device.

The Navy Cost Inspector resident auditor at Princeton has submitted his study of the University's overhead for 1957.

Subcontracts: Negotiations for definitive subcontracts with Allis-Chalmers and RCA continued. Several meetings regarding CSA purchasing procedures and the terms of their proposed purchase order forms were held and substantial agreement on procurement policies, personnel policies and principles of cost reimbursement were reached. "Ground rules" confirming these agreements will be written and made part of the contractual agreements. Procurement policies and procedures were reviewed by Washington on November 21st. No major objection was raised.

Allis-Chalmers reported its preliminary study of the work, and an estimate of cost and time. This is being reviewed by NYOO as a basis for fee negotiations.

Financial Aspects: Revised schedule estimate by Allis-Chalmers and RCA indicate the possibility of a six-month saving in delivery of a usable, although uncompleted device. The funding problems which would be incurred by the new schedule are being considered by Washington.

Princeton University, Accelerator Project, Contract AT[30-1]1916

The definitive contract is still under consideration, so work is being continued under the letter contract. NYOO has replied to comments made by the Comptroller's office and by Counsel. Discussions held by NYOO with the Navy Cost Inspector regarding overhead on Project Matterhorn also have applications to the accelerator contract.

Construction of the administration and services building is proceeding satisfactorily. Steel erection is about a week behind schedule; on November 30th, it was about 65 per cent complete. Grading of the site has been completed. NYOO found that current estimates for the building to house the accelerator may be substantially greater than the original estimate of about \$900,000. The architect-engineer, Gibbs and Hill, should complete their preliminary design shortly. NYOO will then review the estimates to determine the reasons for the increase. NYOO and Princeton representatives visited the Naval Ordnance Plant at Charleston, West Virginia, to inspect excess armor plate for possible use in shielding the accelerator. NYOO is attempting to acquire about 4,000 tons for this use.

Princeton Area Office

Approval to establish an area office is under consideration by the Division of Reactor Development.

University of Rochester, Cyclotron Project, Contract AT[30-1]875

Additional laboratory space was completed, and should be accepted early in December. The Elementary Particle Physics Building is three-quarters complete.

Sylvania-Corning Nuclear Corporation, Contract AT[30-1]GEN-366

When the contract was transferred from the Sylvania Electric Products Company to the new Sylvania-Corning Nuclear Corporation, work for the Division of Research remained at SEP under a Sylcor subcontract. Following discussion with that Division, NYOO is arranging to contract directly with SEP for this work.

An NYOO representative observed the burning of about 33 kilograms of uranium scrap turnings and sludge which contained 2.78% of U-235. This is the first enriched uranium burned by Sylcor and the first burning of any nuclear material since the thorium explosion at Sylvania in July of 1956.

A revision of reimbursable personnel costs which revised cost of living allowances and changed Sylcor's educational benefits policy was approved.

Yale University, Heavy Ion Linear Accelerator, Contract AT[30-1]2052

Work to bring the machine into full operation is continuing. Further modifications and tests were made to bring an ion beam through the accelerator tanks. The Project Director expects to do this after the changes are completed. The University has submitted a revised reduced budget for operation from October 1, 1957 to September 30, 1958. The figure is still about \$27,000 over that made available by Research. After visiting the Project, NYOO reviewed the budget in detail and is recommending to the Director of Research that the additional amount be provided, which would give the Project a budget of about \$597,000 for the year.

Property Management

NYOO continued to supply excess equipment to contractors yielding considerable savings. During November, for example, excess equipment was again furnished to Brookhaven, Columbia, Franklin Institute, Harvard University, Princeton, and Rochester, totaling \$10,559. Since initial cost was \$42,802, it was a saving of about 75%. The items included machine tools, office furniture and equipment, and laboratory equipment.

Through the Property Branch, NYOO contractors selected approximately \$86,000 worth of excess property from the Columbia University Mineral Beneficiation Laboratory in New York City now being closed by the Division of Raw Materials. The acquisition represented about 40% of the total property being disposed. The excess cost, approximately \$16,000, represented a savings of about \$70,000 to NYOO contractors.

CIVILIAN APPLICATION AND INSPECTION

Access Permits

The summary of Access Permits issued to NYOO through November 30, 1957 is as follows:

New Secret Permits issued	4
New Confidential Permits issued	<u>3</u>
Total New Permits	7
Permits Expired	2
Total Permits	532
Confidential-Restricted Data	234
Secret-Restricted Data	298

56 LX clearances and 71 QX clearances were granted to Access Permit Holders during this period. During the month of November, 4 inspections of Access Permit facilities were made; 6 facilities were approved for storage of classified Restricted Data.

Inspection Incidents

The clean-up of the contaminated laboratory of Patterson-Moos, Division of Universal Winding Corporation, has progressed without incident to the point where it is approximately 95% completed.

Investigation by the Post Office Department regarding the loss of 25 microcuries of Cs¹³⁷-Ba¹³⁷ [Mock Iodine Capsule] while in transit to Francis Delafield Hospital, New York, N. Y., revealed no trace of the missing source. No appreciable hazard is involved in this loss.

One over-exposure was reported by Bethlehem Steel Company, Quincy, Massachusetts, to one of their employees who was performing industrial radiography on steel castings with two

250 milligram units of radium and one 730 millicurie unit of Cobalt 60. Investigation is in progress.

Investigation regarding the over-exposure at Isotope Products, Inc., Buffalo, New York is pending.

A loss of one sealed light source containing 550 millicuries of tritium at the Atomic Fair was reported. Investigation revealed that the loss occurred on the day that numerous school children were touring the exhibit at the Coliseum. Due to the lack of hazard and the delay of the reporting of this loss by U.S. Radium Corporation, Morristown, New Jersey, no special effort was made to ascertain its location.

Licenses for Inspection

Total active licenses at beginning of month	2,170
Licenses added during month	60
Licenses cancelled during month	61
Total active licenses end of month	2,164
Net change from end of previous month	6
Number of licenses inspected this month	26

GENERAL ADMINISTRATION

Arrangments were made with the U.S. Naval Ammunition Depot, Earle, New Jersey, for disposal at sea of 162.74 tons of contaminated wastes for the Chicago Operations Office: Pittsburgh Area Office [Westinghouse Atomic Power Division].

A visit was made to the New York Regional Office, GSA, to formulate plans for the orderly disposal of surplus property located at ACF Industries, Buffalo, N.Y. NYOO will act for the Albany Office when called upon to do so.

Inoculations against Asian Flu were given to NYOO employees in accordance with the Commission's program for protection of AEC employees against a possible influenza epidemic.

A survey of the military reserve status of NYOO employees was completed.

During November, the Public Information Service assisted:

James Culligan, in preparation for CBS TV's "Let's Take A Trip" show which emanated from BNL

Dr. John Bugher, Rockefeller Foundation, data and visual aids for speech

Jill Goldstein, Pageant Magazine, information and photos for a story on computers

Lee Ames, Doubleday Publishers, background and photos for forthcoming high school science book

Pat Allen, Science World, high school science publication, photos and background

Janet Sakolowski, MD Medical News, data and photos for medical reactor story

Arthur Morse, and Edward Jones, CBS TV, data for forthcoming "See It Now"

Morris Berkowitz, United Nations Review, film consultation

Harold Cahan, WBZ TV, Boston, film consultation and film provided -- used for atomic energy day TV show seen by over one million viewers

Harvey Cort and Al Wasserman, CBS TV, continuing aid for forthcoming atomic energy segment of Twentieth Century series

Many requests for speakers on atomic energy were received and several talks were assigned during the month. On November 5th, the Chief of the Radiation Branch participated in a seminar for AFL-CIO plumbers in Greenfield, Massachusetts. On November 13th, a representative of the Radiation Branch spoke before the Valley Stream Parent Teachers Association on the Peaceful Uses of Atomic Energy. On the same day, the Deputy Director of the Contracts Division spoke before the National Council of Jewish Women, Wildwood, New Jersey on the same subject.

Requests for routine information and for future film bookings increased. The film library arranged for 423 showings. These were viewed by approximately 1,027,499 people, including the million viewers of the Boston TV show mentioned above.

MANAGER'S OFFICE

<u>Date</u>	<u>Visitor</u>	<u>Visited</u>	<u>Subject</u>
11/19	Dr. A. Ruark, RES and H.J. Morton, C&S, Wash.	C.H. Sullivan, Acting Mgr.	Discuss Matterhorn Project
11/20	H.S. Traynor, Asst. Gen. Mgr. and J.G. Adams, Con- sultant to AEC	NYOO	To meet with Dr. L.J. Haworth, Director, BNL

HEALTH AND SAFETY LABORATORY

ENVIRONMENTAL HEALTH SERVICES AND STUDIES

Background Radiation Studies

Background measurements made by members of the Radiation Branch in the Denver, Colorado area were essentially identical to those made in that area last summer. This second survey eliminated the possibility that fallout had been present during the earlier measurements.

Tests using various phosphors to augment the response of photographic emulsions to ionizing radiation were made. With Co^{60} as a source, film packets were placed in contact with Pilot B, a commercial plastic phosphor and $\text{NaI}[\text{Tl}]$ crystals. It was found that enhancements of the order of two were achieved with the plastic phosphor while enhancements of 100 to 1,000 were obtained with the $\text{NaI}[\text{Tl}]$. It was found, however, that the response is subject to reciprocity law failure reducing the enhancement considerably at lower dose rates. In the range of ten microroentgens per hour, the approximate environmental dose rate in New York City, the enhancement was only between fifteen and twenty for $\text{NaI}[\text{Tl}]$.

An instrument was assembled employing a 20-liter ionization chamber and a Lindemann-Ryerson electrometer in order to provide a lighter and more readily portable ionization instrument for radiation background measurements. Preliminary tests indicate that the use of this instrument is feasible and that leakage currents are very low.

Preliminary discussions with the Naval Air Station at Lakehurst, New Jersey, indicate the feasibility of conducting radiation background measurements in an airship at high altitudes for comparison with measurements in the Rocky Mountains. This can be done on a non-interference basis during routine flights of airships.

General Services Administration Warehouses

In accordance with the terms of a contract between the GSA and the AEC, surveys were performed at four national stockpile warehouses in New York and New Jersey to evaluate potential radiation hazards originating from stockpiles of certain ores and minerals. Measurable radiation intensities were found in the vicinity of several kinds of materials in the four warehouses, but exposures to personnel were small in all cases. A report

of the surveys was forwarded to GSA.

National Beryllia Corporation

The New Jersey State Department of Health held a meeting in Newark to review beryllium control procedures to be followed at a new plant being activated by the National Beryllia Company in Haskell, New Jersey. The HASL complied with a request to send a representative to the meeting to assist in the evaluation of the beryllia dust hazards and control. Officials of the company described in detail proposed control methods which, in general, were accepted as being satisfactory. The presiding member of the Department of Health group stated his intent to request assistance from HASL in performing an occupational exposure study at the plant after operation has begun.

Sylvania-Corning

An inspection and survey was made of the Sylvania-Corning plant, Hicksville, by representatives of the Inspection Division and the Radiation Branch to consider certain aspects of nuclear safety in plant operations.

Princeton University

A safety and fire protection survey was made of AEC facilities at Princeton. In general, the status was satisfactory. Several specific recommendations were submitted to the Chief of the Princeton Field Office.

Summary of Analytical Support

<u>Item</u>	<u>Received</u>	<u>Run</u>	<u>Backlog</u>	
			<u>This Month</u>	<u>Last Month</u>
Uranium				
Air Dust	63	359	0	296
Urinary	284	129	256	101
Misc	65	15	172	122
Beryllium				
Air Dust	24	41	4	21
Urinary				
Misc	14	15	7	8
Radium				
Urinary				
Misc	65	15	186	136
Radon				
Thoron				
Fluoride	7	0	54	47
Misc	95	0	108	13
U-235 Urine	0	0	12	12
U-233 Urine	0	0	3	3
Totals	617	574	802	759

WEAPONS EFFECTS

Proposal to Use Point Sources for Structural Attenuation Measurements

In response to a request from the Chief, Civil Defense Liaison Branch, Division of Biology and Medicine, the feasibility of using point sources for fallout attenuation measurements was examined. It is understood that the Commission has an interest in providing FCDA with a simple field method of evaluating attenuation in buildings and shelters. It was concluded that point sources, used in any practical number, will not yield accurate attenuation data. However, it was suggested that a point source system might be useful for FCDA exercises if approximate data are acceptable and the inherent inaccuracies are recognized. An exercise employing a simplified source pattern was developed and submitted to Headquarters for consideration.

Operation HOTSPOT

A proposed set of operating procedures for OPERATION HOTSPOT was prepared jointly by the Industrial Hygiene Branch and the Radiation Branch.

At the request of the Deputy Manager, NYOO, contractors at MIT and at the University of Rochester each designated two representatives to participate in the HOTSPOT program.

Fallout

During this period 9,040 fallout samples were processed at HASL.

Strontium Samples

Completed during this period:

Isotopes, Inc.

Rainfall and Pot Samples	39	
Miscellaneous	<u>4</u>	43

Nuclear Science and Engineering Corp.

Rainfall and Pot Samples	37	
Miscellaneous	<u>5</u>	42

HASL

Milk	1
Miscellaneous	2
	<u>3</u>
	88

In process as of 12-1-57:

Isotopes, Inc.

Human Bone	332
Rainfall and Pot Samples	6
Milk	6
Miscellaneous	46
	<u>390</u>

Nuclear Science and Engineering Corp.

Human Bone	248
Rainfall and Pot Samples	49
Milk	1
Miscellaneous	30
	<u>328</u>

HASL

Animal Bone	7
Rainfall and Pot Samples	3
Milk	120
Soil	37
Miscellaneous	29
	<u>196</u>
	914

Prepared for Contractors 0

CONSULTATION, PUBLICATION AND OTHER STAFF SERVICES

Consultation

The report of the LMFRE Site Selection Committee on which a member of the Radiation Branch participated, has been transmitted to the Manager for consideration.

The Laboratory assisted representatives of the State of New York in the evaluation of certain radiation measurements made at the Mt. Kisco plant of the Canadian Radium and Uranium Corporation.

Representatives of the Brooklyn Navy Yard visited the Radiation Branch to discuss Carbon-14 measurements.

Conferences

The Director, HASL, and Chief of the Radiation Branch attended the meeting of the Advisory Committee on Biology and Medicine in Chicago, November 7-9.

The Chief of the Radiation Branch attended the meeting of the Radiological Society of North America in Chicago.

The Chief of the Analytical Branch and a Chemist attended the Annual Bioassay Meeting conducted at Mallinckrodt Chemical Works in St. Louis.

The Assistant Chief of the Analytical Branch attended a meeting at the Weather Bureau's Office of Special Projects, Washington, to discuss IGY fallout problems.

The Chief of the Analytical Branch discussed a proposed Atlantic seawater sampling program with Dr. Vaughn Bowen of Woods Hole Oceanographic Institute of November 5th.

Lectures by HASL Staff Members

<u>Name</u>	<u>Subject</u>	<u>Conference or Place</u>
Lough	Bases for Maximum Permissible Dose [MPD] of Ionizing Radiation	N.J. Section of the American Industrial Hygiene Association
Blatz	Radiation Safety	AFL-CIO, Greenfield, Massachusetts
O'Brien	Radiation Safety	New York City Fire College
Lough	Environmental Control of Radiation	Conn. Public Health Assoc., Fairfield State Hospital

Nuclear Safety

Feasibility Report NMI-FR-5B was reviewed and approved, Nov. 27, 1957.

INSTRUMENTATION

DTR System

The DTR system has progressed to the point where most of the functional difficulties have been resolved. The glow decade failures should cease with the completion of some circuit modifications.

Difficulties with the punch card equipment have been minimized; however, punched paper tape equipment has been installed to parallel the storage function of the cards. When a tape to punch card conversion apparatus is available in the Biometrics Branch the punch card machine at the DTR will be removed, unless unforeseen difficulties arise with the punch paper tape.

The Radon equipment is moving toward completion, with installation of the gas systems practically finished. Some study has been applied to determine which components are most adequate for controlling the pass band characteristics of the amplifier so that this response can be properly maintained in the circuit design. The system has been arranged so that the count will be reported each two hours. The timing accuracy need not be greater than $\pm 2\%$.

Modular equipment is being tested for application of low level counting systems to the DTR.

Multi-channel Analyzer

The control mechanisms of the multi-channel analyzer have been assembled and tested. The basic control is a stop count unit, a read clock, a 2^{16} binary fill strip and a series of controlled triggers. The clock operates at 100 kc per second with a gate cut-off time of less than 10 microseconds. By virtue of this speed the gate closes with sufficient rapidity so that no pulses are transferred during the grating operation. In addition to the control system a read conversion unit has been laid out. The unit consists of a decimal scaling device with a capacity of 10^5 counts. The read-out provides 5 decimal scales which are displayed by decades on the analog. It is possible to bring out the 50 individual digits or, by a binary coded decimal system, it can be put on tape in 20 digit form. Channel drives, preamplifiers, and other needed parts of the system are in practically final form. The preamplifier may be improved by use of the RCA 2N384 since the present transistor, a 2N247, has a rise time of from 50 to 100 millimicroseconds whereas the 2N384 is at least twice as fast in rise.

Low Level Counting

Development work is practically complete on a transistorized anti-coincidence circuit for the Libby gas flow counting equipment. For minimal counting background the gas flow must be in the order of 50 milliliters per minute.

The geiger counter units have been returned to proper operating condition. Development work is proceeding for adaptation of this equipment to the DTR assembly. Instead of the original transformer coupling arrangement, a transistor preamplifier will be used since it is a far better pulse impedance conversion unit.

Whole Body Counter

The specifications are complete for fabrication of the shield. Bid requests are out for preparation of the room in which the counter will be housed; negotiations are underway for canning of the crystal onto the tube face; castings have been purchased but not yet delivered for the tube housing.

Transistor Circuits

An automatically driven slit single channel analyzer with window analyzer capabilities, a transistorized binary scaler, a log ratemeter and a regulated power supply are in the process of construction.

Mercury Vapor Detector

This project has been resumed with promising results from a study of means of lamp stabilization. It is expected that a reliable unit will result without the need to monitor light intensity but by monitoring the UV lamp current. This can best be judged by the zero stability of the instrument with a clean air supply.

Alpha Scintillation Counter

A prototype large area alpha scintillation counter has been fabricated and has the useful sensitivity of the Sampson ionization survey meter. The instrument can also measure beta-gamma radiation by bias lead adjustment.

VISITORS TO HASL

<u>Date</u>	<u>Name</u>	<u>Staff Member Visited</u>	<u>Subject of Discussion</u>
11/1	Dr. I. Berstein, Controls for Radiation, Inc.	Lough	Current developments and techniques in instrumentation
11/1	Dr. P. Kruger, Nuclear Science & Eng. Corp.	Harley Whitney	Strontium analyses
11/1	Messrs. A. Rebd, Special Labs, Inc., M.Jackson, Ball Bros., W.H.Johnston, Standard Oil Co.	Harley Whitney	Uranium, beryllium fluorimeters
11/1	Mr. Roger Miles, NDA	Weinstein	Safety Reports
11/4	Dr. R.C. Bader, Texas A&M	Whitney	Mississippi River Samples
11/6	Dr. F.Western & Dr. T.Ely, DBM, Wash.	Lough & HASL Staff	Review of HASL program
11/7	Mr. William Belser, Study Center of Atomic Risks, Zurich, Switzerland	Blatz & Radiation Branch	Fundamental aspects of radiation safety
11/7	Messrs. H.B. Perry, H.W. Rapp, Travelers Insurance	Breslin	Radon sampling & radiometric lab. equipment
11/12	Commissioner W.F. Libby	Harley	Strontium program & film badges
11/12	Mr. C.F.Berghout, Army Chemical Center	Breslin	Beryllium machining control measures
11/13	Mr. L. Costrell, NBS	LeVine	Transistor Circuits
11/14	Drs. J.Z. Holland, DBM and H.Volchok, Mr. R.Carr, Isotopes, Inc.	Harley	Strontium analyses

11/20	Dr. Dan Beninsen, U.N. Scientific Comm. and Dr. M.B. Crespi, AEC, Buenos Aires, Argentina	Harley Breslin	U.N. Radiation re- ports; beryllium analyses; industrial hygiene
11/21	Dr. E.J. Kilkawley, RPI	Harley	Equipment required for environmental engineering course at RPI
11/21	Mr. James Richardson, Bendix, Eatontown, Pa.	Breslin	Thorium urine sampling
11/25	Mr. P. Byrne, Sales Mgr., Tracerlab, Western Div., & Mr. Michael Aquinas, Jr.	Lough	Discussion of fission product analysis at Tracerlab
11/26	Dr. J. Silverman, Mr. M. Pofcher, Radiation Appli- cations	Harris	Beryllium control measures
11/27	Mr. A. Lieboff, NYU	Radiation Branch	Construction of chamber for back- ground measurements
11/29	Mr. Manual Carierus, Bolivia	Harris	Industrial hygiene program at HASL

SECTION II

BROOKHAVEN NATIONAL LABORATORY MONTHLY STATUS AND PROGRESS REPORT FOR NOVEMBER 1957

BROOKHAVEN AREA OFFICE

ADMINISTRATION

Associated Universities, Inc., Contract Negotiations

The draft definitive contract sent to Associated Universities, Inc., on October 28, 1957, is being negotiated. The negotiators are endeavoring to reach agreement on the contract before December 31, 1957.

FACILITIES AND RESEARCH

Cosmotron

During routine operation on November 5th the coil of the Cosmotron failed at the injection end of Quadrant No. 1. Disassembly of the coil in this quadrant has shown that the failure is identical to the previous one in Quadrant No. 2 of nine months ago. At that time it was recognized that the existing coil configuration in combination with small motions due to the cyclic pulsing of the magnet resulted in very high stress concentrations. Indeed, in addition to the member which failed, other similar members in the same quadrant exhibited fatigue cracks. At that time the cracked members in that quadrant were replaced, minor changes made in all members of that quadrant to help relieve the stresses, and clamping arrangements were improved in all four quadrants in the hope that fatigue cracks in the other quadrants had not progressed too far. It was decided not to remove the copper in the other three quadrants because of the large increase in down time required.

However, the present failure is clear indication that the fatigue cracking in Quadrant No. 2 was not an isolated instance and that major modification of the coil end design is required. Because of the difficulty and expense in handling and reinsulating the present copper, it will be best to start with new copper. A new design is presently under detailed study and representative samples of the old design are being subjected to metallurgical examination. The new design avoids all of the known difficulties of the present coil and in addition will be considerably easier to install. The replacement of the coil will interact with the already planned program for completely shielding the Cosmotron and adding to the experimental area. The original plans would have forced complete shutdown for a few months and elimination of daytime operation for an additional six months during the calendar year 1958. By careful planning it will be possible to dovetail this program with the coil repairs in such a manner that only the erection time of the shield need

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be added to that required for the coil repair itself. It is believed that there will be a net gain in time by overlapping the two programs.

18" Cyclotron

This machine was operated successfully throughout this period to complete the measurements of the angular distributions of elastic and inelastic neutron scattering from Pb^{206} .

60" Cyclotron

During the past month the Cyclotron has been in steady operation for research of the Physics, Chemistry, and Medical Departments. It has also been used by the University of Pennsylvania, Johns Hopkins and Columbia Universities, and by Mt. Sinai and Walter Reed Hospitals either for collaborative work with the Laboratory or for service irradiations.

Electrostatic Generator

During this period the Van de Graaff has been operated without any breakdowns at the rate of nine shifts per week (two per day except Friday). Projects being continued include the study of C^{14} and N^{14} levels occurring in the deuteron and proton bombardment of enriched C^{13} targets, development of the pulsed beam technique, and a study of the scattering of 6 Mev gamma rays from various materials. Further improvements have been made, and tests have been completed on the new pair spectrometer detector.

Nuclear Reactor

The Reactor has been operated on a routine basis for research and the irradiation of samples. 48,618 m.w. days of reactor operation were accumulated to midnight, November 24, 1957. Maximum power level during this period was 17.0 m.w.

LIQUID METAL FUEL REACTOR RESEARCH AND EXPERIMENT

LMFR Program--Brookhaven National Laboratory

Investigations for ultimate use of sodium in the 4" Loop plans for use of one pump in each Loop, and elimination of many valves are proceeding. High Velocity Loops 3 and 4, Loop "N", and Exponential Experiments are getting into the final stages of design.

Outgassing graphites G, KY9, R, and HLM at 900°C produced an increase in their bismuth uptake in 1000 hours at 550°C. Other types were not markedly affected. Bismuth and Bi + Mg have not been observed to wet graphite.

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Of twenty-four thermal convection loops now in operation, seven now show corrosion in the hot leg. Four of these pitted after approximately 5000 hours of operation. Heat treatment after welding is believed to have caused pitting of the other three. Low inhibitor concentrations are being investigated.

A 1-1/4 Croloy pumped loop has now operated for 1500 hours at 75°C bulk bismuth temperature differential (520-445°C) without evidence of corrosion and only slight precipitation in the cold leg. The 2-1/4 Croloy pumped loop has now operated for 5050 hours with no observable corrosion except in the 502 welds in the hot test section.

After accumulating 1800 hours on its present 3000-hour test, Loop G had to be shut down on November 15th as a result of a leak in a Bi-filled vent line. The pipe was corroded through.

The plugged slurry loop is being re-assembled, and a new loop designed to permit stirring in the dump tank and better drainage of the slurry particle upon dumping. A loop to study ThO₂-Bi is being designed.

Results of the in-pile capsule experiments show that fission-product iodine and xenon buildups on the walls of graphite containers from U-Bi solutions is independent of the types of graphite studied.

Measurements with e.m.f.-concentration cells have been useful in explaining the thermodynamics of the Na-Bi system. By similar techniques the thermochemistry of MgCl₂ in NaCl-KCl solutions has been established. In searching for a method of achieving Th-U separation in Bi solution, special NaAlI₄ salt has been prepared for equilibration experiments. Continuing studies show that in Bi-salt systems rates of approach to chemical equilibrium are rapid. In bench-scale equipment and in the first controlled experiment of its type, it was demonstrated that U and Zr once oxidized into the salt phase can be brought back quantitatively into the metal phase by Mg reduction.

The final analysis of diffusion length in the 2:1 graphite-to-bismuth stack has been finished. Age measurements in the same stack are nearly completed.

LMFRE Program—Babcock and Wilcox Company

From a list of all test variables within the LMFRE Materials Test Program, prime variables were selected for possible application to a statistical analysis.

Arrangements were made with Brookhaven National Laboratory to use their 3 Mev Van de Graaf and counting facilities for the delayed neutron shielding experiment.

An analysis of the hazards connected with a sodium leak was made; dose calculations yielded negligible values at all distances from the plant.

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Work by the A. D. Little Company to find a practical method for continuous uranium monitoring of the primary stream has indicated a promising method using magnetic susceptibility.

A study of thermal convection cooling for the LMFRE reflector indicates that it is feasible but more costly than a pumped circulation system.

Proposals for uranium solubility studies were received from Battelle Memorial Institute, Stanford Research Institute, and Armour Research Foundation.

Two capsules of 250- and 500-hour duration have been completed. Microscopic examination of the specimen and capsule wall surfaces of known surface conditions indicates little or no attack on Croloy 2-1/4 material due to liquid-metal solution.

The Utility Loop (prototype testing) has been in continuous operation for two months, and a total of 1600 hours has been accumulated. It is planned to operate this loop isothermally until the Mg and Zr concentrations reach the specified equilibrium conditions and can be maintained at that level.

Three different welding inductors have been made and tried under various conditions of heat and pressure. All work was done on 3-inch schedule 80 pipe in carbon steel and Croloy 2-1/4, better results being obtained with Croloy.

An H&M pipe beveling and cutting machine, a welding head, and a constant potential DC welding transformer have been purchased for the investigation of butt-welding pipe using the gas-shielded metallic-arc process.

PROJECTS UNDER CONSTRUCTION

Alternating Gradient Synchrotron

Synchrotron Machine: Detailed design is 87 per cent completed, and construction is considered 3 per cent completed overall.

Status of Major Procurements:

Magnet Cores: Approximately 400 tons of steel sheets were received at Baldwin-Lima-Hamilton, and 600 tons additional were melted and cold rolled during the month by Allegheny-Ludlum. The press has been shipped from Hamilton Division to Baldwin-Lima-Hamilton, and all machine tools required are set up in area and wired. Stacking assembly fixture designed and released for construction.

Magnet Coils: The building addition for the coil work at National Electric Coil has been completed. Special machinery is being set up, and prototypes are due to be started December 9th, about a week later than previously scheduled.

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Magnet Power Supply: A large quantity of drawings has been processed by Westinghouse Electric for approval. Brookhaven National Laboratory engineers visited the Buffalo plant of Westinghouse to review the design of the liquid rheostats.

Klystrons: Eimac has most of the material required on hand and has machined a large portion of the parts for subassemblies. Eimac experienced high voltage failures on two more of the Air Force tubes which are serving as development types for the BNL types.

Ferrites for RF Cavities: The first forty rings were received and checked, and forty more have been shipped by Ferroxcube Corporation. The latest schedule shows that all rings will be shipped by June 1958.

General On-Site Work: The first prototype drift tube has been roughed out and the contour cut by the AGS shop. A complete assembly is being made to check procedures. Templates for all the drift tube contours (124) have been fabricated and checked. All components for the Magnet Test Facility have been placed on order either with outside vendors or the central shops. Arrangements have been started for setting up this facility in the Target Building in order to be ready for the first pilot Magnet Core due in February.

Synchrotron Buildings: Construction is 90 per cent completed. At the end of the month the electrical substations were ready to be energized, and the steam piping was ready for steam around the ring. Power wiring to the distribution panels has been completed, the Linac Building wiring essentially completed, and the connections to equipment being done. All structural concrete work is finished and the Cockroft-Walton Enclosure in the Linac Building has been completed.

Magnet Guides and Pedestals were moved into Tunnel and roughly placed. The aluminum piping for magnet cooling water in the Tunnel has been completed and partially tested. Chillers and Magnet Cooling Water Pumps have been set and grouted in the Service Building mechanical room. It is hoped that part of the Linac and Target Buildings can be occupied by December 15th.

Pre-Cast Building Sections: Twenty per cent complete. During the month 269 high density concrete shielding blocks were poured. To date none have been accepted pending clarification of weights and specifications.

General: The AGS warehouse has been held up pending delivery of the paneling for roofing and siding which is due to be delivered the first week in December.

18" Cyclotron Building

A contract was signed with J. C. Felton Contractors, Inc., and Dorald Engineering Company which will permit construction to start on this project.

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Medical Research Center

This project is now 69.2 per cent complete. The erection and welding of the Reactor Container cylinder was completed. The erection of the roof has been delayed by some necessary cutting and refitting of the plate segments. The form work for the Reactor wings was started and well along at the close of the month. A few small heavy shielding concrete pours were made in the Reactor area.

The masonry contractor has completed approximately 75 per cent of the partition work in the laboratory. The main substation and transformer has been delivered, and installation is under way. The contractor has placed the heating system in operation.

Daystrom is now fabricating the Reactor control rod drives, and testing is expected during December. All other Reactor items except the fuel elements have been shipped.

Reclamation Facility and Hot Laundry

The advance notice of construction was mailed to approximately eighty contractors. Detail design drawings were completed and mailed out to bidders on November 23, 1957. The bid opening date for this project is December 23, 1957.

SELECTED SCIENTIFIC ACTIVITIES

Interactions of High Energy Protons with Various Targets

High energy protons interacting with various targets create few readily measured radioactive isotopes with $Z \leq 5$. Cross sections have already been obtained for H^3 and Be^7 production from several target elements and reported. The excitation functions of He^6 formation by protons of 1 to 3 Bev have been measured for five target elements in order to extend the information on low- Z products of such reactions. The cross sections have been measured by a new technique based on nuclear recoil, which obviates the difficulties introduced by the 0.82 sec. half-life. This has been accomplished by using a target composed of alternating plates of the target element and gas spaces filled with a "catcher" gas. The proton beam passed through both the plates and gas spaces, and the recoil energy of the isotopes produced in the plates carried some of each species into the gas. Immediately after production of the radioactivity, the gas was allowed to flow through a liquid nitrogen trap into a nearby evacuated counter chamber, and the decay was followed with a scaler and Brush recorder. This counter chamber was specially designed to hold 400 cm^3 of gas in the center space of a sandwich arrangement, where it was counted with good efficiency by the two outer spaces operating as proportional counters. Under typical conditions, with helium as the catcher gas, the decay curves were readily analyzed into He^6 and one or more long-lived components. The identity of the latter was not always clear, but often contained 19.1 second C^{10} (presumably as CO) and the neon isotopes Ne^{19} and Ne^{23} . In every case the He^6 decay stood out clearly, enabling an accurate measurement of its

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activity. The activity due to He^6 (and to any other isotopes present) was determined for targets made of graphite, aluminum, copper, silver and lead, at several energies from 1.0 to 3.0 Bev. The computed cross sections rise both with increasing energy and with increasing Z, varying between 0.5 mb for C at 1.0 Bev and 29 mb for Pb at 3.0 Bev. (Chemistry Department and Visiting Scientists from the University of Kansas and Yale University)

Measurement of the Total Absorption Co-Efficient of Long-Lived Neutral K Particles

A measurement of the total absorption co-efficient of long-lived neutral K particles has been completed recently. Establishment of the existence of the theta-2 component of the neutral K meson scheme as proposed by Gellman and Pais has been accomplished here and previously reported. In the measurement now reported the theta-2 decay process was recorded by a direct counting method. The arrangement provides a characteristic signature of the decay event which signals a time coincidence of two particles decaying out of a neutral beam; one of the particles is then followed by a further particle in a time characteristic of the muon-electron decay interval. The results obtained add further evidence to that already available concerning the existence of the long-lived theta-2 component. Its total absorption cross section in copper has been measured in good geometry to be 1.12 ± 0.25 barns. Comparison of this value with those for positive and negative K mesons indicates that the observed absorption is compatible with the strangeness mixture; but this experiment cannot be taken as evidence to indicate the conversion of the initially-produced positive-strangeness particle into a particle mixture. Improved accuracy should make such a decision possible. The present results are compatible with a four-component parity-conjugation theory of the neutral K complex. (Visiting Scientists from Stanford and Princeton Universities and the Cosmotron Department)

Bacterial Nucleus

For many years bacteria were considered to have no formal nucleus. Speculations on the mechanism by which their heritable characteristics were transmitted to progeny were many and diverse. The demonstrations in recent years of nuclear-like bodies containing DNA, the genetic material, only magnified the problems, as disagreements arose concerning their similarity to those of higher organisms. One group maintained that the bacterial nucleus was merely an amorphous blob which grew to a certain size, and then in a random manner, divided. Another group believed that mechanisms analogous to those in higher organisms, including all the phases of mitosis and meiosis, occurred.

Recent work using the unique tracer for DNA, tritium-labeled thymidine, has gone a long way towards settling the argument. Using a strain of Escherichia coli, the bacterium commonly found in the human intestine, it was observed that when cells whose DNA was completely labeled with tritium were grown for two or three generations in a nonradioactive medium, many of the progeny contained no tritium. If the labeled DNA had been randomly divided among the

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progeny, all would have been labeled. Since such random distribution did not occur, the DNA obviously remained in large "pieces." Extensive analysis of the data showed that there was only a small number of such pieces per cell, probably no more than an average of two. Thus it appears that the mechanism by which the bacterial DNA replicates is similar to that occurring in higher plants, suggesting that there is a standard pattern in nature by which genetic material is made and transferred to progeny. In simplest terms this would involve a self-complementary inheritable unit in which replication occurred by separation of the halves with each half acting as a template for the formation of its complement. (Medical Department)

Research Reports

During this period thirty-one papers were approved for publication. This number included twenty-one on physical sciences, eight on life sciences, and two on applied sciences.

VISITS

The Laboratory was visited during this period by the following, among others:

72 members of the American Nuclear Society following their annual meeting in New York, on October 30th;

12 members of the German Radiation Safety Training Group, on October 31st;

12 Japanese who attended the U. S. Atomic Industrial Forum Conference in New York City, on October 31st;

53 members of the Society for the Advancement of Management, on November 15th;

17 engineers from Connecticut Light and Power Company, on November 19th;

23 management personnel and engineers from the Long Island Lighting Company, on November 20th;

6 postgraduate officers in nuclear chemistry from Webb Institute of Naval Architecture, on November 25th;

Commissioner John Forrest Floberg and Commissioner John S. Graham, accompanied by L. H. Roddis, G. H. Kavanagh, and Mr. Naiden, from the Commission staff visited Brookhaven, on November 26th.

In addition to the above there were 77 visitors from foreign countries during the month.

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UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT
FOR THE MONTH OF
DECEMBER 1957

Prepared by the Staff of the New York Operations Office
January 22, 1958

USDOE 000477

DOE History Division
NYOO Monthly Reports
Job 1342, Box 5, Folders 2-3

NEW YORK OPERATIONS OFFICE

STATUS AND PROGRESS REPORT

FOR THE MONTH OF

DECEMBER 1957

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SECTION I

NEW YORK OFFICE

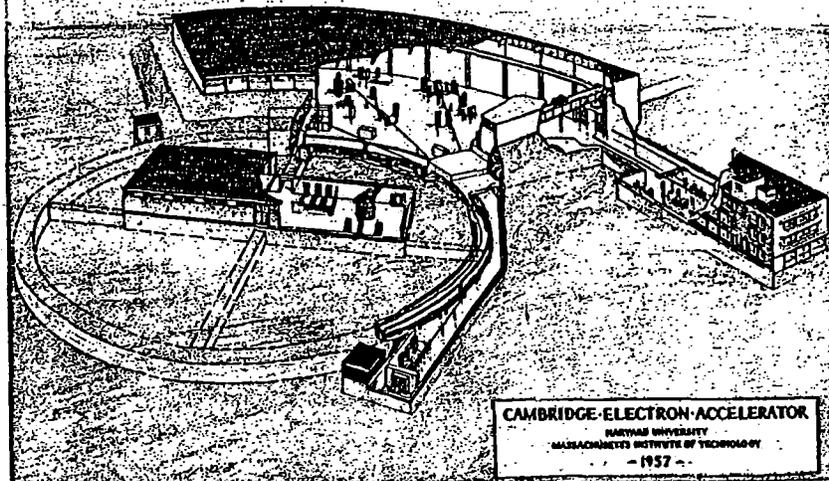
CONTRACT ADMINISTRATION

Harvard University, Cambridge Electron Accelerator,
Contract AT[30-1]1909

A draft contract for operation of the accelerator was submitted to Harvard from NYOO. Work is to begin January 1st. Settlement of overhead must await completion of the NYOO-Navy Cost Inspector's review of the University's costs for last year. NYOO has informed Harvard that indemnification cannot be granted and a meeting concerning pre-publication patent clearance of reports is scheduled with the contractor early in January. All other points are settled.

The contractor for the experimental area, magnet housing and associated structures began work in December. Excavation, removal of trees and erection of fencing was begun, and a pile driving rig was moved onto the site.

The architect-engineer reports that total construction is 14.3% complete, which is about two weeks behind schedule, and that A/E work is 86.8% complete.



Bid invitations on 712 magnet blocks for the magnet sectors were issued to 12 firms. Bids are returnable by January 30th.

The fabrication of the R.F. power supply unit is now behind schedule because of some engineering difficulties. The Project has arranged for experimental work on the injection system, which will be done at Yale.

Massachusetts Institute of Technology

High Energy Physics Research: A meeting with MIT to review transfer of contract responsibility for this work from the Office of Naval Research to the AEC is scheduled for January.

MIT Master Contract: A draft of a master set of terms for future contracts has been sent to the Institute for comment.

New York University, AEC Computing and Applied Mathematics Center, Contract AT[30-1]1480

The Army Audit Agency has been requested to determine an overhead rate for fiscal years 1954 and 1955 which will be applicable to the Center.

Nuclear Development Corporation of America, Contract AT[30-1]862

Instructions for disposal of some radioactive wastes and special nuclear material have been issued to NDA as part of this contract closeout. The closing inventory is under review and the office has also submitted a statement of overhead computation for the final term of the contract to NDA.

Nuclear Metals, Inc., Contract AT[30-1]1565

Agreement to settle "use charge" for the two and a half years ending December 1956 has been reached. Inventory of stores will be the basis for negotiating recovery of the Commission's equity in stores purchased through overhead accounts. Nuclear has requested that NYOO review plans for this inventory.

Foundations are in for Nuclear's North building. The steel and roof are in, and the brick work is almost complete. Foundations are in for the South building and 90% of the structural steel is up. The corridor between the buildings is also under construction.

Princeton University, Project Matterhorn, Contract AT[30-1]-1238

Construction - Bids for the first phase construction at the Model "C" site have been received. Low bidders are in the range of \$1,900,000 to \$2,000,000. Bids are being evaluated in conjunction with the architect-engineer, and award is expected early in January. The selection panel for the architect-engineer for the second phase construction has recommended Commonwealth Associates of Jackson, Michigan. Approval of the selection, and negotiation of the contract are expected early in January. The work is to start about the middle of January.

Power - NYOO is working out details to include the Project's proposal to install a 132/26KV substation for the Model "C" Stellerator and the Proton Accelerator in the second phase architect-engineering contract.

Contract - NYOO is still at work on revision of the contract. NYOO and the University have agreed on a contract modification which requires the University to provide a lease if at any time the University is no longer operating or constructing at the Model "C" site. The document is being prepared.

On December 20th, representatives of NYOO and Washington met with representatives of the office of the Navy Controller to discuss audit submittal for 1957. The Navy requested additional information for use in studying the recommendations of the local cost inspector which are being submitted to this office.

Subcontracts - The Allis-Chalmers and RCA subcontracts have been extended through January 31. The definitive documents should be prepared by this time, but further extensions of the subcontract will still be necessary to allow time for the review procedure. Allis-Chalmers' report on preliminary study of the scope of work has been sent to Washington.

Louis H. Roddis, Jr., Deputy Director, Division of Reactor Development, visited Project Matterhorn for a review of progress and plans of the Project.

Princeton University, Accelerator Project, Contract AT[30-1]-1916

The definitive contract is under consideration by Washington. NYOO has replied to all comments of Washington staff divisions, and work continues under the letter contract.

NYOO has received a revised proposal for project buildings indicating a substantial overrun. Some of the factors affecting cost are: tight construction criteria; increase in shielding; increased working space, and a general "beefing-up" of the building to support increased loads. Copies of the proposal have been sent to Washington with NYOO comments to follow. Princeton has been requested to review estimates for the entire device and bring them up-to-date.

Due to bad weather, construction of the administration and services building is 11% complete, instead of the scheduled 25%. Structural steel is complete, and permanent bolting is proceeding. Excavation for the storm drain is complete.

University of Rochester, Cyclotron Project, Contract AT[30-1]-875

The additional laboratory and shop space is completed and should be accepted by the Commission during January. The Elementary Particle Physics Building is 85% complete and on schedule.

Sylvania-Corning Nuclear Corporation, Contract AT[30-1]-Gen-366

Effective January 1, the part of the work under Sylcor contract being performed by SEP, will be transferred to a direct contract, per NYOO agreement with Sylcor and Sylvania Electric Products, Inc.

Overhead costs have risen sharply due to heavy direct labor personnel cut-backs. NYOO is following Sylcor's efforts to reduce the overhead.

Property Management - NYOO continued to supply excess materials, equipment, and supplies to contractors. The screening of excess property lists by NYOO contractors has resulted in the acquisition of many important items of equipment at savings of approximately \$113,213. This has also been an excellent utilization of government excess.

CIVILIAN APPLICATION AND INSPECTION

Access Permits - The summary of Access Permits issued to NYOO through December 31, 1957 is as follows:

Total New Permits	3
Permits Expired	5
Total Permits	531
(Confidential-Restricted)	230
(Secret-Restricted)	301

40 LX and 36 QX clearances were granted to Access Permit Holders, Requests for 29 LX and 30 QX clearances were received. Five Access Permit facilities were surveyed; and eight storage facilities were approved.

HEALTH AND SAFETY LABORATORY

ENVIRONMENTAL HEALTH SERVICES AND STUDIES

Background Radiation Studies

The Laboratory staff conducted tests of background radiation in the Flushing Meadow Apartments area.

A two month study of the Lindemann-Ryerson ionization chamber combination for measuring background has been completed. This study concluded that the equipment was more easily portable than the vibrating reed electrometer system and found to offer certain advantages in portability. The Instruments Branch has begun work on construction of a model for field use.

A member of the Radiation Branch conferred with the staff of the Naval Air Station at Lakehurst, New Jersey, on arrangements for radiation background measurements to be made from an aircraft at altitudes of approximately one mile. These flights, authorized by the Chief of Naval Operations, are scheduled to begin in January 1958.

Further research on the enhancement of photographic film sensitivity to ionizing radiation by placing film packets in contact with phosphors has revealed that such systems are subject to reciprocity law failure depending upon the dose rate. Development of a reliable dosimeter for uniform dose rates may, however, be possible.

Bridgeport Brass, Adrian, Michigan

A report on a dust study at the Bridgeport Brass Company in Adrian, Michigan has been transmitted to the contractor, the Division of Biology and Medicine and the Production Division at Oak Ridge. The study had examined air contamination problems resulting from the first large scale, gamma-phase extrusion of uranium ingots. These ingots were being heated in a eutectic salt bath and extruded without jackets. Although extrusions were of very hot bare metal, none of the personnel had been over-exposed during the period covered by the study. Nevertheless, the report contains several recommendations for improved operations, in response to findings that permissible radiation levels would be exceeded under full operating conditions.

Beryllium Corporation

A dust study was performed at the new Beryllium Corporation metal plant in Hazelton, Penna. There have been several cases of lost time injury due to acute beryllium poisoning, some of which have been quite severe.

Some of the production equipment, which requires frequent entry for maintenance and adjustment, has caused unusually high short-term exposures. Although respirators were in general use, medical information indicated that further control measures were required.

Operation of the beryllium fluoride production furnace raised particularly troublesome problems. It caused a large amount of fuming requiring frequent entry by personnel. In view of the high degree of hazard involved in fluoride operations, a call was made to the Beryllium Corporation suggesting that immediate action be taken to improve exposure conditions at the fluoride furnaces. The company assured the Commission that it would take corrective steps immediately and that the furnaces would not be operated until procedures had been improved.

Sylvania-Corning Nuclear

A test has been conducted of the burning hood, outside of the Bayside laboratory building, that had been redesigned following the July '56 explosion at the plant. The test included burning 2.8% enriched uranium sludge and powder. Air samples taken in the vicinity showed negligible air contamination.

Summary of Analytical Support

<u>Item</u>	<u>Received</u>	<u>Run</u>	<u>Backlog</u>	
			<u>This Month</u>	<u>Last Month</u>
Uranium				
Air dust	306	4	302	0
Urinary	183	185	254	256
Misc	22	42	152	172
Beryllium				
Air dust	242	14	232	4
Urinary				
Misc	0	0	7	7
Radium				
Urinary				
Misc	34	68	152	186

CONSULTATION, PUBLICATION AND OTHER STAFF SERVICES

Consultation

The Chief of the Industrial Hygiene Branch has been appointed to two sub-committees of the ASA N-7 Committee which is studying radiation protection in the handling of radioactive materials from ores through reactor operations. The sub-committees of primary interest to the Industrial Hygiene group are those concerned with mining and milling of uranium and thorium ores, and refining of uranium and thorium. Other sub-committees of the N-7 Committee are uranium isotopic separation, fuel element fabrication, and routine reactor operations.

The Chief of the Radiation Branch met with the Medical Director of the New York State Department of Labor, Industrial Hygiene Division, to discuss modification of the New York State Labor Code.

The Assistant Chief of the Radiation Branch presented a talk on radiation protection techniques at the In-Service Training Institute for High School Teachers of Science at New York University.

The Chief of the Radiation Branch presented a paper on the current status of maximum permissible doses at the AIHA Tr-Section Meeting in New York.

Conferences

The Director of the Laboratory and the Chief, Analytical Branch, attended conferences in Washington on the ground level monitoring and milk sampling programs of the U.S. Public Health Service.

The Chief of the Analytical Branch attended a conference at AFOAT-1 headquarters on upper air sampling and analysis.

Publication

The report [TID-7545] of the Conference on Shielding of High Energy Accelerators, held April 11-13, 1957, sponsored by the AEC Research Division and the Health and Safety Laboratory, has been printed and sent to conference participants and others on the particle accelerator distribution list.

The report entitled "Beta and Gamma Dose Rates for Terrestrially Distributed Sources," HASL-3, has been sent to those on the physics distribution list.

The final draft of the HASL section of the Reactor Handbook, Volume 3, was submitted to the editor, Dr. Clyde R. Tipton of Battelle Memorial Institute.

Nuclear Safety

A total of ten feasibility reports were reviewed and approved by the Nuclear Safety Review Board in the month of December. Of these, eight were from Sylvania-Corning Nuclear Corp., one from Nuclear Metals, Inc., and one from Schenectady Operations Office.

INSTRUMENTATION

DTR System

The beta tape counting set up of the DTR system has been released to the Analytical Branch for production use. On the basis of Instruments Branch criteria the system is operating in accordance with design specifications. Both the paper tape punch machine and the card punch are operating at present, but the card punch will be removed from the line soon.

The glow decade tube failures should now be eliminated and no further short life failures are expected.

The radon apparatus has been tested and is equivalent to the engineering prototype. The transistorized version, with a band pass of 1.4 to 33 kc and a 34 microvolt input noise level may be compared with the vacuum tube unit in service for the past eight years with a band pass of 7.7 to 22½ kc and an input noise level of 44 microvolts. This contrast shows the superior design of the new unit which has simplified transistorization. The sensitivity of the unit to electrical background noise generated in the DTR system must be reduced, however, but this noise emanates from the central station and should be eliminated there. The counting geometry and the counting background are equivalent to those of the best vacuum tube types of present radon systems.

An initial shipment of equipment has been made to Mallinckrodt Chemical Works; the beta tape units are now on test. Mr. Burr of Mallinckrodt visited the Laboratory for one week to familiarize himself with the system.

In order to avoid interruptions of production counting on the beta tape units, a test central control will be constructed. The power supplies will be less elaborate than those of the

SECTION II

BROOKHAVEN AREA

CONTRACT ADMINISTRATION

Negotiations with Associated Universities, Inc., for renewal of Prime Contract No. AT-30-2-GEN-16 were completed and the required number of copies transmitted to Washington headquarters for approval.

PROJECTS UNDER CONSTRUCTION

Alternating Gradient Synchrotron

Synchrotron Machine—Detailed design is 88.5 per cent and construction 3.9 per cent complete.

Status of Major Procurements:

Magnet Cores—One thousand tons of steel have been received by Baldwin-Lima-Hamilton ready for shuffling. The shuffling fixture is completed, limit stops are being set, and the press has been received and erected. All tooling is completed. The inspection surface plate has been erected, and all inspection gages released for production.

Magnet Coils—National Electric Coil rejected the first copper received and has since received replacement material which is acceptable. The brazing fixture and technique have been approved. To date the four short prototype coils have been bent, and brazing of joints is to start January 6, 1958.

Magnet Power Supply—Westinghouse Electric Corporation has essentially finished the engineering except for the liquid rheostats. Material is being procured with satisfactory progress being made to date.

Klystrons—Eitel-McCullough has made unsatisfactory progress, and their proposal to Brookhaven National Laboratory for a supplement to their contract for additional funds has been tabled. BNL has asked Eimac to review their work and submit a realistic proposal for the required tubes. Failure of Eimac to provide an acceptable proposal will necessitate cancellation and a redesign of the Linac RF System using available conventional power tube components with commensurate greater operating costs.

Linac Tanks—Four tanks are 30 per cent complete, formed, and welded. The first tank (no. 2) is to be shipped to Cleveland Diesel on January 6, 1958, for final machining and finishing for delivery to BNL at the end of February. All carbon steel material is on hand at the contractor, Lukenweld.

Ferrites for RF Cavities—To date 125 rings have been received, 85 during December from Ferroxcube Corporation.

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General--All of the magnet coil mounting hardware has been placed on order with the first portion due early in February to be available when the pilot model cores and coils are due for initial testing.

Synchrotron Buildings--Construction is 90.7 per cent completed. During the month Brookhaven occupied a portion of the Target Building to be used for the Magnet Test Facility and moved in some equipment. Stone and Webster recommended that Brookhaven accept the area in the Target Building noted above, the Target Building crane, steam headers in the Target Building including unit heaters, fire mains outside the Target and Linac Buildings, the electrical substations, and most of the lighting system. The contractor continued work on the heating with temporary operation of some systems; steam had been on in all the fan houses as well as Linac and Target Buildings; controls are being installed together with insulation. Equipment is being set in the Service Building Machine Room and piping continued. Target Building crane has been connected to power and tested. Magnet girders in Target Building have been set to grade and leveled.

Pre-Cast Building Sections, Inc.--40 per cent completed. The following shielding blocks have been poured: 230 side blocks, 231 plug blocks, and 78 cover beams. About one-third of these have been accepted. A supplement to the contract was prepared to incorporate revised specifications and permitting a lower rejection limit on unit weights and also extended completion date to May 1, 1958. It is planned to erect shielding in April.

General--The siding and roofing for the AGS Warehouse arrived and has been 75 per cent installed during the month. Now scheduled for completion during January. The electrical work for the warehouse is about 50 per cent completed.

Motor Generator Foundation--Plans are nearly complete, and it is planned to take bids during January.

Cosmotron Experimental Area

The Area Office recommendation for the final selection of the Architect-Engineer for this project was submitted to New York Operations Office for review on December 23, 1957.

18" Cyclotron Building

Notice to proceed was issued to the contractor on December 31, 1957. The required excavation work and preparations for pouring concrete footings and retaining wall are under way.

Medical Research Center

This project is now 71.5 per cent complete. The fabrication and erection of the steel roof for the reactor enclosure has been resumed. The contractor

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started to pour the reactor basement slab, the balcony, and the walls for the north connecting wing at the close of the month. The installation of utilities in the reactor was well under way during the month.

The masonry contractor has substantially completed the partitions in the laboratory and the finish white plaster coat throughout the job. The installation of ceramic tile continues, and all glazing work was completed except at entrances. The installation of acoustical tile ceilings was started.

The installation of the main substation and transformer has been completed, and it is awaiting tie-in to the main Laboratory feeders.

Daystrom has satisfactorily solved the design problems on the control rod drive for the MRR. On December 9, 1957, satisfactory tests of a rod drive were witnessed by BNL people at their plant.

The graphite filled dummy fuel elements have been completed but are being returned by Daystrom to Sylvania for repairing some leaks that Daystrom discovered in the aluminum cans. Shipment of the special nuclear material was made to the Sylvania-Corning Nuclear Corporation for fabrication of the fuel elements. Thus, the final delivery of the Daystrom contract is expected within a few weeks.

The three gas-tight doors and their frames being supplied by BNL for the MRR building have been delivered to BNL.

Spraying of the bismuth blocks with magnesium in BNL shops is approximately 75 per cent complete. The aluminum air-tight membrane and the boron carbide cans also being fabricated in BNL shops are approximately 50 per cent complete.

Reclamation and Hot Laundry Facility

Thirteen construction bids were opened for this job on December 23, 1957. No award will be made until a further study of the bids has been made.

ASSOCIATED UNIVERSITIES INC., CONTRACT NO. AT(30-2)GEN-16

Liquid Metal Fuel Reactor Program

The final analysis of diffusion length in the 2:1 graphite-to-bismuth stock has been finished. Age measurements in the same stock are nearly completed.

Measurements with e.m.f.-concentration cells have been useful in explaining the thermodynamics of the Na-Bi system. By similar techniques the thermochemistry of $HgCl_2$ in NaCl-KCl solutions has been established. In searching

SYLVANIA

ELECTRIC PRODUCTS INC.

*File - Bayside Sylvania
AEC Subcontract*

INTER-OFFICE CORRESPONDENCE



BAYSIDE - ADMINISTRATION

WRITTEN FROM

SUBJECT SUBCONTRACT UNDER AEC CONTRACT AT30-1-GEN-366

DATE December 26, 1957

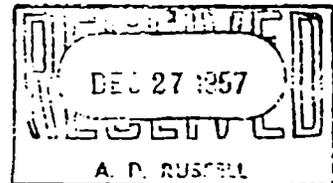
TO A. D. Russell - Batavia

Attached are the five last pages of the subcontract entered into between Sylvania Corning and Sylvania Electric on 18 December 1957. These sheets add an additional article to the body of the contract which incorporates the changes requested by the Atomic Energy Commission. These were discussed with you in our telephone conversation of 18 December 1957. This document will expire on the 31st of December.

The original subcontract was reviewed and commented upon in your letter of 29 October 1957.

J. F. O'Brien
J. F. O'BRIEN

JOB/ed
Attach.



Materials Received
from Client

USDOE 023341

ARTICLE XXXVII - ALTERATIONS IN CONTRACT

The following alterations have been made in this subcontract:

- 1. Cover sheet - delete section entitled amount and substitute the following:

Estimated Cost	\$75,440
Fixed Fee	<u>2,045</u>
<u>Total</u>	<u>\$77,485</u>

- 2. Article I - in concluding paragraph, add to the end of the text "all such amendments shall be subject to the written approval of the Commission".
- 3(a) Article III - in the first sentence, delete the amount appearing on the third line - \$77,665 - and substitute the following: Seventy-Seven Thousand Four Hundred Eighty-Five Dollars (\$77,485).
 - (b) Add the following sentence at the end: "Notwithstanding any other provision of the subcontract, the total liability of the Contractor under this subcontract shall be limited to the said ceiling amount, as same may be increased by the Contractor, in its discretion but subject to the approval of the Commission, by unilateral written amendment to this subcontract".
- 4(a) Article IV - delete paragraph 2. and substitute "the Contractor shall reimburse the Subcontractor for all items of direct cost which are identifiable as such in accordance with the Subcontractor's normal accounting practices consistently applied (referred to in Article XIII) and are hereinafter referred to (said items being included in the term "allowable costs" sometimes used in this subcontract)".
 - (b) Delete the balance of subparagraph (a)(1) of paragraph 2. commencing with the word "providing" on the third line and placing a period after the word "subcontract".
 - (c) Delete subparagraphs 2(e) and (g).
 - (d) Add on the third line of subparagraph 2(j) after the word "Contractor" the phrase "with the written concurrence of the Commission".
 - (e) Delete in its entirety paragraph 3. and substitute the following:

- 3. The Subcontractor shall be reimbursed for its overhead expenses (without duplication or reimbursement made pursuant to 2.(a) above) on the following basis:

- (a) During the term of the subcontract, the Subcontractor shall receive the following provisional allowance or allowances, subject to adjustment pursuant to (b) next following:

Metallurgy Laboratory	120%
Divisional Administrative Expenses	9.7%
Home Office General and Administrative Expenses	2.0%

- (b) Upon conclusion of all work under this subcontract (including close-out work), the Contractor and the Subcontractor shall review the actual overhead costs of the Subcontractor on which provisional allowances were theretofore made and shall mutually agree with the written concurrence of the Commission upon the total amount of such costs which they consider allocable for reimbursement under this subcontract. Any failure to agree shall be resolved under Article XVIII of the subcontract. Following this determination, the necessary adjustments shall be promptly made, in manner agreeable to the Contractor, with respect to the pertinent amount or amounts provisionally paid.
- (f) Delete in the third line of paragraph 4., the amount "\$2,235" and substitute "\$2,045". Also place a period after the substituted amount and delete the remainder of the paragraph in its entirety.
 - (g) Delete the last sentence of paragraph 5. and substitute "all such payments will be tentative and subject to subsequent audits and adjustments to assure that reimbursement and fee payments are properly effected in accordance with the provisions of this subcontract".
5. Article V - in the last paragraph, the last word "Subcontractor" should read "Contractor".
- 6(a) Article X - delete the second sentence and substitute "if any such change results in a material change in the amount or character of the work described in Article I, the parties shall mutually agree in writing, which agreement shall be subject to the written concurrence of the Commission, upon such adjustment of the fixed fee as they consider to be equitable".
- (b) In the third sentence, the phrase "with the written approval of the Commission" should be inserted following the word "may".
- 7(a) Article XI - delete from paragraph 2. the language after the word "basis" on the sixth line.
- (b) In paragraph 3., add the following to the end of the paragraph "and also includes agreements under this subcontract for the personal service of third parties or the employees of third parties".
- 8(a) Article XII - precede paragraph 1. with the words "The Contractor and".
- (b) In paragraph 2., the following clause is added at the end of the present text: ", unless the Commission authorizes their prior disposition".
- (c) Precede paragraph 3. with the following: "Subject to paragraph 2 above".
- (d) Delete the last sentence of paragraph 3 and substitute the following: "the cost of preservation by the Subcontractor following final payment under this agreement is not reimbursable. The Commission shall at all reasonable times, prior to and after the date of final payment under this agreement, have the right to examine and make copies of any such books, papers and records".

9. Article XIV - deleted in its entirety and the following new article substituted:

XIV Safety, Health and Fire Protection

The Subcontractor shall take all reasonable precautions in the performance of the work under this subcontract to protect the health and safety of employees and of members of the public and to minimize danger from all hazards to life and property, and shall comply with all health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission. In the event that the Subcontractor fails to comply with said regulations or requirements of the Commission, the Commission may without prejudice to any other legal or contractual rights of the Commission issue an order stopping all or any part of the work; thereafter a start order for resumption of work may be issued at the discretion of the Commission. The Subcontractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

10. Article XVI - delete from paragraph 1. the term "and the Contractor" in the eleventh and sixteenth lines.
11. Article XVIII - the words "to the Subcontractor" in the fifth line are changed to "to the parties"; in the sixth line the words "the Subcontractor" is changed to "either party".
- 12(a) Article XIX - in the first line, the term "Subcontractor" is changed to read "Contractor" and in the fourth line delete the word "or" and substitute the words "with the concurrence of".
- (b) In the concluding sentence, the following phrase is inserted after the word "protection": "at cost directly or indirectly reimbursable under this subcontract".
13. Article XX - deleted in its entirety and the following new article substituted:

XX Title to Drawings and Other Data

All technical data (including, but not limited to, notes, drawings, designs, specifications, reports, and memoranda) furnished or prepared by the Subcontractor pursuant to, or developed in connection with, the Subcontractor's understandings under this subcontract, shall be the property of the Government, and the Government shall have the right to use (and have used) said data in any manner and for any purpose without any claim on the part of the Subcontractor for additional compensation therefor).

14. Article XXIII - deleted in its entirety and the following new articles substituted:

XXIII Claims and Legal Proceedings

- a. The Subcontractor shall give the Contractor and the Commission immediate notice of any claim, or suit, action, or other legal proceeding, asserted or brought against the Subcontractor by reason of or in connection with the performance of its undertakings under this subcontract.
- b. If in the opinion of either the Contractor and the Commission it appears that the claim, or suit, action, or other legal proceeding, would, if successful, be a reimbursable item under paragraph 2. of Article IV, the Subcontractor shall, unless otherwise directed by the Contractor or the Commission, furnish the Contractor and the Commission without delay all pertinent papers received by the Subcontractor in regard thereto, or such copies thereof as the Contractor and the Commission may request. Nothing provided in this paragraph shall preclude or otherwise prejudice any subsequent determination, by mutual agreement or resolution under the Disputes Article, regarding the question of reimbursement.
- c. To the extent requested by the Contractor or the Commission in connection with any claim, or suit, action, or other legal proceeding which it appears would, if successful, be a reimbursable item under paragraph 2. of Article IV, the Subcontractor shall promptly and in good faith (i) defend or otherwise handle the matter, in manner and by means agreeable to the Contractor and the Commission, (ii) permit the Contractor or the Government to defend or otherwise handle the matter, (iii) assign to the Contractor or the Government all of the Subcontractor's rights as against the claimant which are properly for assignment to the Contractor or the Government hereunder under all the circumstances involved, and (iv) consult with, and otherwise cooperate fully with and assist, the Contractor and the Government to help protect the rights of the Contractor and the Government. It is understood that all such Subcontractor efforts in connection with claims, suits, actions, or other legal proceedings which, if successful, would constitute reimbursable items, shall be reimbursable under paragraph 2. of Article IV.
- d. If the Contractor or the Government so requests, the Subcontractor shall initiate litigation and other legal proceedings, and shall take such measures in connection therewith as the Contractor or the Commission requests, including steps similar to those referred to in (i), (ii), (iii), and (iv) of c. above in connection with defense. The Subcontractor shall be reimbursed under paragraph 2. of Article IV for its expenses incurred with the approval of the Contractor and the Commission in connection with this subdivision.

15. Article XXVII - the word "Commission" is replaced by the word "Contractor" throughout.
16. Article XXVIII - the word "fissionable" is replaced by the term "special nuclear" and the reference to the Act is changed to 1954.
17. Article XXII and XXV - the terms "contract and Contractor" are replaced by "subcontract and Subcontractor" where necessary.

IN WITNESS WHEREOF, the parties hereto have executed this subcontract the day and year first above written.

ATTEST:

SYLVANIA-CORNING NUCLEAR CORPORATION

S/M.C. CULLEN
CONTRACT ADMINISTRATOR

By B/GARTH W. EDWARDS
Title
CONTROLLER

ATTEST:

SYLVANIA ELECTRIC PRODUCTS INC.

S/HELEN SCHLESS
SECRETARY TO DR. ELLEFSON

By S/B.S. ELLEFSON
Title
VICE PRESIDENT

APPROVED:

U. S. ATOMIC ENERGY COMMISSION

Authorized Representative

ENERGY COMMISSION

OFFICIAL USE ONLY

Facility: Sylvania Corning Nuclear Corp.

INTRODUCTION

This report results from a regularly scheduled security survey of this class "B-AP" Facility, conducted on February 25, 1959 in accordance with AEC MC 2403. The following individuals were present and furnished the necessary information for this report:

Mr. Timothy J. O'Connor, Security Officer
Mrs. Mary Morris, Document Custodian
Mr. John R. Zambrow, Engineering Manager
Mr. Eugene M. Mazza, Assistant to Mr. Zambrow
Mr. Martin C. Cullen, Contract Administrator
Mr. William J. Donahue, Accountability Officer

Inspection, examination of systems and procedures, including spot checks of records and discussion with various key personnel revealed Facility's security program could still be improved upon. However, the composite security rating of "Satisfactory" is continued. Deficiencies noted during this survey and recommendations that were previously reported (NYOC SSR dated 7/15/58), and as yet to be complied with, are included within this report.

Facility performs classified metallurgical research and development work on alloys for fuel rods under NYOC Contract AT(30-1)-366. In addition, various projects or tasks for other AEC offices, under the sponsor program, are performed by Sulcor under the NYOC contract. They are as follows:

LAROO-HARAO (Pratt & Whitney):

Task C-36: Research and development on dispersion type fuel elements. Material, composition, testing, technological techniques, end product, all are classified "Secret-RD". (Feasibility Report #49, Task C-36).

Task C-54: Fabrication of hydrides (Moderator). This task is in the process of closing out.

LAROO (GE-ANP):

Task C-4: Preparation of ceramic type fuel elements. TERMINATED.

COO (Argonne National Laboratory):

Task C-19: Research and Development on wafer type fuel elements. TERMINATED

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Facility: Sylvania Corning Nuclear Corp.

Task C-61a Army Low Power Reactor: **TERMINATED**

EDCO (Phillips Petroleum):

Task C-166: Research and Development pertaining to MTR fuel elements.

SROO (e. i. Du Pont):

Task C-33: Reduction of Thorium Oxide.

SAI (UCRL):

Task 72: In addition to work under the Pluto Program, Facility will be required to do shop fabrication classified "Secret".

ALCOA:

Task 72: Facility has been retained by IASL for material development. Work, documents, and material are classified "Secret-RD".

SAVANNAH RIVER OPERATIONS OFFICE:

AT(30-1)-1293: Origination, storage and transmittal of documents classified as "Secret-RD" of a management interest relating to the SROO project performed at Sylvania's Hicksville, LI, NY location, a project inspected and reported by SROO. At the time of this survey Facility was retaining only the "Secret" contract.

LOUKLAND AIRCRAFT REACTOR OPERATIONS OFFICE:

P. O. ANFO-210025 with General Electric Co., ANFD, Evendale, Ohio, to fabricate special fuel elements. Security interest includes the performance of classified work and the receipt and retention of classified documents. Work under this project will also be performed at Sylvania Corning's Hicksville, LI, NY location, a facility inspected and reported by SROO. Mr. T. J. O'Connor advised that under this interest Dr. C. I. Whitman has been appointed Classifying Authority. He believes this should be changed and Dr. John L. Zambrow be appointed instead. The reason being that Dr. Whitman is primarily concerned with sales and Dr. Zambrow has already been appointed COD by SROO.

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Facility: Sylvania Corning Nuclear Corp.

SIROO is requested to submit appropriate FIR to establish their interest in the F.O. (See COMMENTS & RECOMMENDATIONS).

NEW YORK OPERATIONS OFFICE:

(S) (Secret): To determine the commercial potential of nuclear fuel recovery and reprocessing which the company is now studying. Categories approved: C-4, 7, 10, 20, 25, 26, 37, 40, 41, 46, 47, 55, 66, 68, 70, 76, and 78.

Security Desk is also located at Facility's Hicksville, LI, NY location which is inspected by SROO.

OTHER INTERESTS:

SIROO: "C" interest of Dr. John Zambrow, who has been appointed COD for Sylvania-Corning's declassification program.

Security interests at Sylcor concern the receipt, storage, handling and transmittal of SS materials and documents classified through Facility presently has under custody a Category I amount of SS.

Under the NYDO contract AT(30-1)-366, Facility is an authorized T/A Station and included is an Accountability Station established for Dr. Morris Cohen, a Consultant to Sylcor, located at MIT, Cambridge, Mass.

Sylcor, which is jointly owned by Sylvania Electric Products Company and the Corning Glass Company, occupies rented space in facilities owned by Sylvania Electric. Sylvania Electric Products Company uses the Classified Mail Address indicated on P. 1, Item #11, for NYDO contract AT(30-1)-2102. This Facility is inspected and reported separately.

As previously noted, recommendations listed in NYDO SSR dated 7/15/58 are, in some instances, repeated again in the report. A letter from the NYDO Contracts Division was sent to Facility on July 17, 1958 listing the major recommendations found as a result of the previous survey. The following recommendations were offered to Facility at that time and to facilitate reading, the action taken is also listed:

1. "Appointment of COD to review AEC matter for classification or declassification".
(Dr. John Zambrow was appointed COD by OROO on 11/25/58).

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Facility: Sylvania Corning Nuclear Corp.

2. "Maintenance of an Access List of cleared persons authorized to have access to R/D matter and the categories to which each is authorized, together with monthly review of such Access List".
(Facility established an Access List by categories of individuals authorized access to Research & Development Reports in accordance with AEC MC 2109.08a, a copy of which has been furnished this office. The List is maintained on a current basis. Changes are noted by the Security Officer and Document Custodian).
3. "Separation of classified from unclassified matter including AP from R/D Reports".
(Facility, within its Classified Document Library, has established two separate sections for AEC documents; one side classified and the other unclassified).
4. "Identification and accountability of classified documents".
(The Classified Document Librarian, Mrs. Morris, is maintaining a classified document register, a monthly record of all incoming classified reports and cross reference index cards).
5. "Periodic review of clearances for termination, reaffirmation, etc.".
(Clearances are on a continuing basis for review, termination and reaffirmation, according to the Security Officer).
6. "Proper stamping of all AEC R/D Reports".
(The Document Custodian, since the last survey, has reviewed all classified AEC reports in her possession for proper marking and documentation. A spot check revealed no discrepancies and documents were properly downgraded or declassified).
7. "Proper marking of all classified documents authorized for downgrading or declassification."
(Same as #6).
8. "Reduction in the number of individual classified file locations and a monthly inventory of all classified documents to be submitted to the Classified Library Document Control or the person responsible for the classified documents at each such point."
(Since the previous survey, Facility has eliminated six individual classified file locations.

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Facility: Sylvania Corning Nuclear Corp.

The Security Officer stated that additional locations will be, in time, eliminated).

- 9. "Decisive follow up action on classified documents which continue to remain missing or unaccounted for". (Although the Security Officer stated that Facility was actively investigating the loss of classified documents, it is apparent that additional effort could be exerted in this regard. At the time of the last survey, Facility had 11 unaccounted for documents. Since that time Facility has notified this office on 1/13/59 that one "Secret" document had been located. However, on 11/3/58 Facility notified NYOO that three more "Secret" documents were reported missing. See DOCUMENT CONTROL & COMMENTS & RECOMMENDATIONS).

Facility, as a result of this survey, has again been notified of the deficiencies in its security program. A date will be established within the next few weeks to return to Facility and determine the action taken on recommendations and deficiencies found during this survey, as well as recurring problems of Facility's security program.

COMPLIANCE WITH PART 25

Section 25.15: There have been no changes in activities or pursuits of the Access Permittee to warrant revision of the original application. Although a recent merger of Sylvania Electric Products Co. and the General Telephone Company was accomplished, it in no way affects the corporate status of Sylvania Corning Nuclear Corp.

Section 25.22(b): Since all of Facility's classified data has been received from EISE, Oak Ridge, according to O'Connor, it is assumed that classified data retained by Facility corresponds with the categories authorized by the Permit.

Section 25.24(b): Changes that have occurred in Facility's security program have been noted by Facility's Security Officer in letters to NYOO amending the original Security Plan on file in this office.

Section 25.30: There are no exceptions, additional conditions or requirements connected with this Access Permit. O'Connor reiterated his desire to comply with any recommendations or revisions deemed advisable by this office.

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 11/3/58
 11/13/59
 11/3/58
 11/13/59

*James Weiss, U.S. Gov.,
Savannah River Operations*

This document consists of 2 pages.
No. 13 of 16 copies. Series A .

UNITED STATES
ATOMIC ENERGY COMMISSION
New York Operations Office
376 Hudson Street
New York 14, New York

LETTER MODIFICATION NO. 35 effective as
of the 30th day of September, 1959
- to -
CONTRACT NO. AT-30-1-Gen-366 entered into
as of the 1st day of July, 1948

Sylvania-Corning Nuclear Corporation
Willetts Point Boulevard
Bayside, Long Island, New York

Gentlemen:

1. This letter, subject to your written acceptance, sets forth the initial agreement between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), acting through the ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA-CORNING NUCLEAR CORPORATION (hereinafter referred to as the "Contractor"), in anticipation of a definitive modification to Contract No. AT-30-1-Gen-366 under which the Contractor would continue the performance of the work presently provided for under paragraph 1 of Article II of said contract.
2. Pending the execution of said definitive modification and, in the manner, and to the extent, requested by the Commission from time to time, the Contractor shall continue performance of said work. Said performance hereunder shall commence on October 1, 1959.
3. All of the provisions of said contract, as heretofore modified, shall apply to performance of, and compensation for, said work, except paragraph 2 of Article II (other than the first sentence thereof), paragraph 1 of Article III, paragraphs 1 and 2 of Article IV, and subparagraphs a, b, c, g and i of paragraph 4 of Article IV; provided, however, that the reference in subparagraph e of paragraph 4 of Article IV of said contract to "monetary ceiling" shall be deemed to refer to ceilings in subparagraph d of said paragraph and to the amount in paragraph 5 of this Letter Modification.

MR.	T-10	
SUBJECT	1-10	
ASST.	1-F	

Murray
27

USDOE 016613

4. Negotiations have been undertaken, and will be continued, for the execution of said definitive modification which will supersede this Letter Modification. It will provide for a fixed fee or fees to the Contractor and will include such detailed terms and conditions as the parties agree upon which may or may not be at variance with the provisions of this Letter Modification.

5. Pending the execution of said definitive modification, the Contractor's actual costs in its performance hereunder shall not exceed Four Hundred Forty-Four Thousand Dollars (\$444,000.00) in the aggregate which sum shall be the limit of the liability of the Government in connection with said performance hereunder whether or not this Letter Modification is terminated pursuant to paragraph 6 hereof or by notice pursuant to Article III of said contract.

6. In case said definitive modification is not executed by April 30, 1960, (or any subsequent date mutually agreed upon in writing) this Letter Modification will terminate on the stated date or on such subsequent date, as the case may be. Such eventuality shall be deemed to be a termination covered by paragraph 4 of Article III of said contract.

7. This letter, executed in duplicate on behalf of the Government, is forwarded to you for your consideration. If satisfactory, it is requested that the following acceptance form on Copy No. 1 hereof be executed on behalf of the Contractor and returned to this office as promptly as possible. Copy No. 2 is for your retention.

Very truly yours,

UNITED STATES OF AMERICA

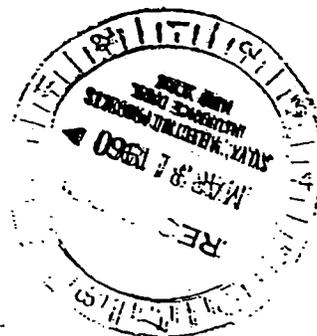
By: UNITED STATES ATOMIC ENERGY COMMISSION

By: /s/ Joseph L. Smith
Contracting Officer

Accepted:

SYLVANIA-CORNING NUCLEAR CORPORATION

By: /s/ H. C. Sullivan
Title: Contract Administrator



Irradiation programs.

March 29, 1960

List - see below *

Howard M. Cohen

It has just come to my attention that Sylcor is committed to obtaining irradiation services in connection with two programs which we are conducting for the AEC under Contract 366.

It has been Sylcor's policy that we will not permit any items which we have produced or on which we have worked to be used in or in connection with a reactor or critical facility without first obtaining protection for Sylcor against resulting potential liability to Sylcor. This policy is based on the assumption that our potential liability could exceed by far the value of the contract and conceivably even the assets of our company. The protection which we require normally takes the form of insurance and/or governmental indemnity against liability to third parties and a waiver of any claims which the owner-operator himself might have against us; claims of the reactor owner-operator for damage to property at the reactor site are not normally covered by liability insurance and there is at least some question as to whether they would be covered under our government's usual form of indemnity.

Unfortunately, we do not have any direct indemnity under Contract 366. Modification No. 25 to that contract merely provides that the Commission will consider whether or not to amend the contract to provide for express indemnity to cover any future aspect of our activities under the contract which in the Commission's opinion may give rise to a probability, or any remotely possible existence, of a nuclear hazard. I have discussed with Jack Hart of NYOO the possibility of obtaining an indemnity and waiver of consequential damages under this clause with respect to our existing programs. He indicated that any such request would have to be processed through Washington; he noted that the timing, at least with respect to the Chalk River project, is such that it could result in cancellation of that entire program. Under the circumstances we have agreed to go ahead with the irradiation of the four capsules already sent to Chalk River, with the understanding that NYOO would agree to try to negotiate adequate coverage for us on the Chalk River job with respect to any future irradiation and also retroactively to cover us with respect to the present irradiation. Jack Hart has also agreed to reimburse us for any additional cost of

*M. Cullen
A. Master
W. Kuzick
S. Strauss

obtaining private insurance coverage for these risks. Our insurance people have just informed me that they have been able to obtain 5 million dollars of such coverage at least against third party claims. The cost will be nominal at most. However, damage to the reactor site will not be included.

I also reviewed with Jack Hart the possible methods which we might have of protecting ourselves in connection with potential liability resulting from irradiation of the items being encapsulated by NDA. Again it is possible that we may be able to obtain an indemnity directly from the Commission under Contract 366. It is at least questionable, however, whether such an indemnity would cover damage to the reactor site. It would appear that the simplest and quickest way of protecting ourselves with respect to the NDA and other irradiation jobs to be done in U. S. reactors would be to provide for such protection in our contractual agreements for the actual irradiation.

Under the Price-Anderson Act a governmental indemnity is made available to the owner-operator of all U. S. reactors, obtaining such an indemnity and carrying any related insurance which may be required would be a condition to the reactor operator's license. The indemnity and related insurance would in turn cover the liability of anyone who might be liable. Under present AEC policies a contract operator is entitled to similar indemnity protection. Thus no serious problem would be presented if, as a condition to any irradiation agreement, we were to request evidence that the reactor operator is covered by a Price-Anderson indemnity and has obtained and will maintain insurance in the type and amount required as a condition to the effectiveness of such indemnity. Evidence which we would require under such a contractual provision would consist of a copy of the indemnity agreement itself and a certificate of insurance running to Syloor. Since there is at least some question as to whether Price-Anderson indemnity would cover damage to the reactor operator's facility and the related liability insurance clearly would not cover this, a waiver of consequential damages from the reactor operator would have to be obtained in addition to the foregoing evidence.

Specifically, with respect to the NDA job, I understand that pursuant to our arrangements with NDA it has issued an invitation to U. S. reactor operators to bid on the contemplated irradiation service. In a separate note to Bill Ruzicka I am including a few paragraphs which should be added to our proposed written agreement with NDA. I have reviewed the general nature of the problem involved with Jack Hart and I believe that he is agreeable to this proposed procedure.

Finally, with respect to any future jobs involving irradiation in the U. S. provision should be inserted in our basic agreement with the reactor owner-operator or with the contractor who will arrange for the irradiation service, substantially in the same form as that which I am proposing for the NDA job. On work involving possible irradiation in a foreign reactor, I believe it would be best to contact me for appropriate

working well in advance of entering into any formal commitment for performance of the work; Bob Bigel or Bob Gyory would also have to be informed of these jobs well in advance in order that we may arrange for appropriate insurance coverage. Furthermore, in our future renewals of Contract 366 we should insist upon inclusion of a provision to the effect that we will not be obligated to proceed with delivery of any items which are to be used in or in connection with a reactor or critical facility unless we have first obtained assurance that Sycor shall be adequately protected against both third party liability claims and claims for consequential damage which may arise from the use of our products in or in connection with the reactor or critical facility. I assume that Marty Guller will be in touch with me at the appropriate time in order that we may agree upon applicable language for insertion in next year's renewal amendment to 366.

CC: Dr. Davenport
G. Edwards
R. M. Povern
J. Zamorov
R. Gyory ✓

DELETED VERSION

CONTRACT NO. AT-30-1-GEN-366

AMENDMENT NO. 14 TO APPENDIX "D"

This is Amendment No. 14, to Appendix "D" referred to in Modification No. 35 to this contract.

The following paragraphs are added, effective July 1, 1961:

43. During the period July 1, 1961 through September 30, 1961 the Contractor's research and development work and related services shall pertain to:

A. Irradiation of Uranium-Yttrium Alloys.
Paragraphs 12 through 16 of the Contractor's proposal (Form NYOO 230), captioned "Irradiation of Uranium-Yttrium Alloys" dated January 4, 1961, a copy of which is on file in the Commission's New York Operations Office, specify the details of this project.

B. Direct conversion of UF_6 to UF_4 to UC.
Paragraphs 12 to 16 of the Contractor's proposal (Form NYOO 230) captioned, "Direct Conversion of UF_6 and UF_4 to UC", dated January 6, 1961, a copy of which is on file in the Commission's New York Operations Office, specify the details of this project.

44. Also during the period July 1, 1961 through September 30, 1961, the Contractor shall perform research and development work and related services, in accordance with the technical aspects of the Contractor's classified proposal to the Commission, captioned

~~XXXXXXXXXX~~ a copy
of which is on file in the Commission's New York Operations Office.

ba

IN WITNESS WHEREOF, the parties hereto have executed this document.

Witnesses as to execution
by the Contractor:

(Address)

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: _____

(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.

BY: _____

TITLE: _____

I, _____, certify that I am the
_____ of the corporation named as Contractor
herein; that _____ who signed this document
on behalf of the Contractor was then _____ of said
corporation; that said document was duly signed for and on behalf of said
corporation by authority of its governing body and is within the scope of
its corporate powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of said
corporation.

(Corporate Seal)

Copy No. 13 of 17 copies.

MODIFICATION NO. 39
SUPPLEMENTAL AGREEMENT TO
CONTRACT NO. AT-30-1-GEN-366

MODIFICATION NO. 39

CONTRACTOR AND ADDRESS: SYLVANIA ELECTRIC PRODUCTS, INC.
Willets Point Boulevard
Bayside, Long Island, New York

MODIFICATION FOR: ADDITIONAL CONTRACT ACTIVITIES
AND OTHER CHANGES

INCREASE IN MONETARY ESTIMATE: \$33,357.00

TOTAL MONETARY ESTIMATE: \$10,749,930.00 (inclusive of fee)

SUBMIT INVOICES TO: UNITED STATES ATOMIC ENERGY COMMISSION
New York Operations Office
376 Hudson Street
New York 14, New York

THE ORIGINAL COPY OF THIS DOCUMENT
HAS BEEN EXECUTED BY BOTH PARTIES.

USDOE 016603

THIS MODIFICATION, effective the 1st day of July, 1961, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC. (hereinafter referred to as the "Contractor"),

WITNESSETH THAT:

WHEREAS, as of the 1st day of July, 1948, the Government and Sylvania Electric Products, Inc. entered into Contract No. AT-30-1-GEN-366 for the performance of certain research, development, and related work; and

WHEREAS, said contract has been modified heretofore in a number of respects, and the parties desire to modify said contract further, as hereinafter provided; and

WHEREAS, this modification is authorized by law, including the Atomic Energy Act of 1954;

NOW, THEREFORE, said Contract No. AT-30-1-GEN-366, as modified previously, is hereby modified further as follows:

1. The following is added as item (4) of paragraph (b) of Article IV
FIXED FEES

"(4) 43 and 44	\$2,946.00"
----------------	-------------

2. In Article V - INITIAL ESTIMATE OF COST, the amount \$10,749,930.00 is substituted for the amount \$10,716,573.00, which amount is inclusive of all fixed fees under this contract, except as provided in paragraph (a) of Article IV.

3. Pursuant to the pertinent provisions of this contract, with respect to the period January 1, 1960 to December 31, 1960, both dates inclusive, it is agreed between the parties hereto: that the fixed rate for the allowance of the Engineering Laboratory overhead shall be 148.5% of the direct salaries and wages (excluding overtime premium payments) reimbursable under this contract with respect to said period; that the fixed rate for the allowance of General and Administrative overhead shall be 7.4% of the total of (i) the direct items of expense reimbursable as such under this contract with respect to said period (but excluding costs for equipment and cost or expenses pertaining to any litigation) and (ii) the amount determined by application of the 148.5% rate referred to above in this sentence.

IN WITNESS WHEREOF, the parties hereto have executed this document.

Witnesses as to execution
by the Contractor:

(Address)

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: _____

SYLVANIA ELECTRIC PRODUCTS, INC.

(Address)

BY: _____

TITLE: _____

I, _____, certify that I am the
_____ of the corporation named as Contractor
herein; that _____ who signed this document
on behalf of the Contractor was then _____ of said
corporation; that said document was duly signed for and on behalf of said
corporation by authority of its governing body and is within the scope of
its corporate powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of said
corporation.

(Corporate Seal)

B

THIS IS NY 21-2559 GABLS

GENERAL ELECTRIC HERE IN LOCKLAND AREA OFFICE CENTER OHIO
TO ASKED DIRECTOR OF BUDGET AND FINANCE DIVISION NYOO
ATTN DELOVEGGIA

GENERAL ELECTRIC HERE IN LOCKLAND IS NEGOTIATING WITH SYLVANIA ELECTRIC
TO DO WORK FOR GENERAL ELECTRIC DURING THE PERIOD NOV 1958 THROUGH
FEBRUARY 1959 ON ACCEPTABLE BASIS AND PLAN TO UTILIZE THE
UNDATED FORM TO YOUR CONTRACT 366 PD THE COST ESTIMATE FROM SYLVANIA
PROVIDES FOR TOTAL COSTS OF \$48,973 WHICH INCLUDES A FIXED FEE OF
\$2,659 OR 6 PER CENT OF TOTAL OPERATING COST ESTIMATE AND \$2,000
FOR EQUIPMENT PD OVERHEAD HAS BEEN ITEMIZED AS 120 PER CENT OF TOTAL
DIRECT LABOR AND G.A.A. AT 10.6 PER CENT OF TOTAL OPERATING COSTS PD

VERIFICATION IS REQUESTED FROM YOUR OFFICE THAT OUR OPERATING
G.A.A. AND FEES RATES ARE ACCEPTABLE AND IN LINE WITH OUR OPERATING CONTRACT
RATES WITH SYLVANIA UNDER NYOO CONTRACT 366 PD THE RATES REQUESTED FOR THE
OVERHEAD AND G.A.A. RATES ARE PROVISIONAL SUBJECT TO APPROVAL AND REVIEW
BY AUDITORS PLEASE ADVISE BY RETURN TELETYPE OR LETTER

CONTAINS PD
\$195,000 1958 1959 \$48,973 \$2,659
\$2,000 6 PER CENT 366

INFORMATION COPY

NR 89 SENT 5404/1340 Z ML
R 1 OK M U OK THX M

NARA II
R 326
Accession 4KR
426 97-006
Records cover the
establishment
operation of the
Lockland facility
NA 14070 (9-87)
Box 82

NARA 000695

PROPOSED SUBCONTRACT NO. AT-24 WITH
SYLVANIA ELECTRIC PRODUCTS, INC.

T. R. Clark	0-5
A. E. Pecher	0-3-3
H. W. Holliday	0-3 ←
W. A. Jeffrey	0-5
S. J. Saksa	0-4
B. J. Sevold	0-2
VJN - File	
VJN - F.U.	

Cincinnati 15, Ohio, February 25, 1954

R. E. VanAundal
ACCOUNTANT

Enclosed for your review and approval is a draft copy of proposed
Subcontract No. AT-24 with Sylvania Electric Products, Inc. under Prime
Contract AT (11-1)-171.

This instrument is identical to a similar agreement we have with
Sylvania Electric Products, Inc. for work that is also classified, which
was previously approved by your office, except that the subject Agreement
has been altered to reflect the change in the scope of work, date of
completion, fixed fee, allotted sum, and subparagraphs (a), (b), (c) and
(d) of paragraph 2 have been added.

The predecessor to the subject Agreement shall hereinafter be referred to
as Subcontract No. AT-23.

Your comments or approval at an early date will be appreciated.

Original Signed By
V. J. NICHOLAS

V. J. Nicholas, SUPERVISOR - SUBCONTRACTS, Bldg. D, Ext. 269

VJN:ro

Enclosure

SEARCHED	INDEXED
SERIALIZED	FILED
FEB 26 1954	
FBI - CINCINNATI	

V. J. Nicholas

NARA II
 RG 326
 Accession 4KR
 326 83 -COB
 Records covering the
 establishment
 operation of the
 Lockland Area Office
 1950-1961.
 NA 14070 (9-87)
 Box 82

NARA 000597

SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. AT-24 (Appendix C)
Date Rec'd by A. B. 4/26/54
Reviewed by g/b
Date Release by A. B. 5/6/54

Brief Description of Proposed Subcontract: add additional work to Contract AT-30-1- Gen 366 (See DCF-4480)

Does proposal include:

1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes () no () *See DCF-4480 (copy in attached file)*
2. Estimated cost of the subcontract exclusive of fee? yes () no () *\$44,314.⁰⁰*
3. List and details of firms considered? yes- () no () *not applicable*
4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? yes () no () *2% = \$2,259.⁰⁰*
5. Facilities available? yes () no ()
6. Time factor involved. yes () no ()
7. Equipment available, Delivery yes () no ()
8. Discussion of availability of specifications and drawings. yes () no ()
9. Is cost element complete - Yes
Cost estimate:
a. Labor *See DCF-4480*
b. Materials *(Revised Cost estimate)*
c. Plant & Equipment
d. Overhead
e. Fee

Item No.	Remarks
6.	Work shall end on February 28, 1954.
7.	Except Carbon resistor furnace - the cost of this item is provided for in total cost of Subcontract.

On the basis of the above, Administrative Branch recommends: Approval

Subcontract Exhibit #3
Subcontract Check List - Administrative Branch

Approval
 Disapproval

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NARA 000586

FINANCE BRANCH
SUBCONTRACT CHECK LIST

Proposed subcontract with Appendix C AF-60-1 - June 2
 Proposed subcontract No. Cessna Daily @
 Type of subcontract CPT+
 Effective date of proposed subcontract May - June 8, 55
 Amount of subcontract \$ 48,973
 Subcontract reviewed by M. A. Paemter
 Date: 5/5/54

Item No.	Description	Yes	No	Ref.
<u>A. GENERAL</u>				
1.	Has the subcontract been reviewed by the Administrative and Technical Branch and indication made as to:			
	a. Approval that Subcontract is necessary?	✓		
	b. Approval in selection of Subcontractor?	✓		
	c. Approval as to type of Subcontract?	✓		
2.	Has any of the standard contract language been changed to fit the requirements of the particular Subcontractor?			<i>See Ref.</i>
3.	Does the file indicate that all questions have been resolved between the Contractor and the Subcontractor and that no items remain open for negotiation?	✓		
4.	In the case of CFFF Subcontract has the Commission approved this type of action?		✓	
5.	Does the Subcontract adequately stipulate the delivery requirements or the duration of the Subcontract?			<i>see Ref.</i>
6.	Does the proposed Subcontractor presently have a Subcontract with the Contractor?	✓		
7.	Has the proposed Subcontractor ever had a Subcontract with the Contractor?	✓		
8.	Does the file indicate that the Subcontractor is financially able to perform the work?		✓	

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Item No.	Description	Yes	No	Ref.
B. SPECIFIC				
9.	<u>The Schedule</u>			
	<p>a. Does the schedule clearly indicate the dollar limitation of the Subcontract and amount of Fixed Fee if any?</p> <p>b. Does the schedule clearly indicate that the costs will be reimbursable in accordance with GM-ACG-17?</p> <p>c. Reimbursable Costs:</p> <p>(1) Does the Contract language clearly segregate direct costs from indirect costs?</p> <p>(2) Are the overhead rates, if applicable, on a Provisional Basis? On a Fixed Basis?</p> <p>(3) If overhead rates are applicable, does the Subcontract language provide for proper redetermination dates?</p> <p>(4) If applicable, does the Contract language provide that there will be no duplication in the reimbursement of indirect and direct costs?</p> <p>d. Are there any changes provided in the schedule that delete, alter or modify existing standard Contract language?</p>	<p>✓</p> <p>✓ <i>See above</i></p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p></p> <p></p> <p><i>Pro.</i></p> <p></p> <p><i>See below</i></p>
10.	<u>The Cost Estimate</u>			
	<p>a. Does the file indicate that a careful review has been performed by the Contractor's accounting department of the Cost estimate and that it meets with their approval?</p> <p>b. Does the Cost estimate give a complete breakdown of the various elements of costs?</p> <p>c. Does the Cost estimate agree with the dollar limitation provided in the Subcontract?</p>	<p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p> <p>✓</p>	<p></p> <p></p> <p></p>

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Item No.	Description	Yes	No	Ref.
d.	If overhead and G&A rates are applicable, does the file adequately include proper supporting data to carefully evaluate that the overhead and G&A rates are acceptable?	✓		<i>See memo from 7/4/41</i>
e.	Were the overhead and G&A rates, if applicable, determined by:			
	(1) Analysis of Contractor records & reports?		✓	
	(2) From overhead rates developed by Cognizant Army Agency?		✓	
	(3) From rates presently existing in similar AEC Contracts with the same proposed Subcontractor?	✓		
f.	Has the Cost estimate been reviewed by:			
	(1) Technical Branch (Manpower)?	✓	✓	
	(2) Administrative Branch (Equip. & Materials)?	✓	✓	
	(3) Security Branch (Security needs)?		✓	
11.	<u>The Fee Schedule</u>			
a.	If applicable, is the Fee Schedule provided?	✓		
b.	Does the Fee Schedule indicate:	✓	✓	
	(1) Total cost of the Work?	✓	✓	
	(2) Elimination of unallowable items from fee basis?	✓	✓	
	(3) Percentage of fee?	✓	✓	
	(4) For review and approval by the Commission?	✓	✓	
c.	Is the fee amount in agreement with the fee provided in the Subcontract?	✓		

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Item No.	Remarks
4	Not presented to Commission for approval.
10 a	Not accomplished by Contractor.

Jan:
 I am awaiting a reply from Njos (Metcum) in regard to the above, for a second trial. Further items are being reviewed and will appear for Finance stamp. However action should be taken in regard to the above two items.

On the basis of the above, the Finance Branch recommends:

- Approval
 Disapproval
 Additional information required

M. A. Palmeto
 M. A. Palmeto
 Chief, Finance Branch

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SUBCONTRACT PROCUREMENT CHECK LIST
FOR TECHNICAL BRANCH

Subcontract No. Appendix C - AT(30-1) Gen 346
 For: Ceramic Development @
Sylvania
 With: S.F.P.
 Rec'd. by T.B. 4/27/54
 Review submitted by R.B. 4/28/54
 Reviewed by: D. Routh
 New Renewal

Item No.	Question	Yes	No
<u>A. Description</u>			
1.	Are the ultimate objectives toward which the subcontract is directed adequately described?	✓	
2.	Are the specific objectives of the subcontract reasonably bounded so as to clearly indicate its relationship to the primary effort (i.e. of the prime contractor)?	✓	
3.	Are these objectives appropriate to the time and expense to be devoted to their attainment?	✓	
4.	Has a work schedule been established for the various phases of the subcontract?		✓
5.	Is a specific method of approach given for accomplishing the statement of work?	✓	
6.	Are drawings and specifications clear and concise?	✓	
7.	Is it anticipated that this subcontract will require renewal?	✓	
8.	Is a definite end item required or is contractor's best effort specified?	✓	
<u>B. Justification</u>			
9.	Has the necessity for the subcontract work been satisfactorily demonstrated?	✓	
10.	Is there a reasonable expectation that the subcontract will meet the technical requirements set forth in the subcontract?	✓	
11.	Have alternate plans been considered for meeting these requirements?	✓	
<u>C. Contractor-Subcontractor Relations</u>			
12.	Does the procurement require technical liaison between contractor and subcontractor or vendor?	✓	

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Item No.	Question	Yes	No
13.	Is provision made for modifying the objectives of the subcontractor with respect to changes, termination in part or completely, or additions calling for delivery of special items or services?	✓	
<u>D. Security and Safety</u>			
14.	Does the procurement require the vendors access to classified information or restricted data in the form of drawings, specifications, mock-ups or other information?	✓	
15.	What is highest security classification anticipated on work?	Secret R.D.	
16.	Is it possible to declassify any portions of the work?	✓	
17.	Are radiation or health hazards involved?	✓	
<u>E. Selection of Subcontractor</u>			
18.	Were all bidders furnished same specifications?	N/A	✓
19.	Were any possible bidders rejected because of lack of "Q" cleared personnel?		✓
20.	Is the subcontractor's bid based on meeting all specifications, including time limit?	N/A	
21.	Does the successful bidder's delivery date depend on priorities?		✓
22.	Are any lump sum purchase orders of a similar nature open to the subcontractor?		✓
	a. with AEC?		
	b. with other government agencies?		
23.	Is there question as to the subcontractor's ability to accomplish this work?		✓

Item No.	Remarks
5.	<i>Due to the research nature of the work a specific method of approach for carrying out work is not applicable.</i>

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Item No.	Remarks (cont)
	<p>It is requested that Monthly Progress Reports be supplied LAO on the work performed under this subcontract.</p>

On the basis of the above, the Technical Branch recommends:

- Approval
- Disapproval
- Additional information required
- Alternate Source

Explanation: _____


 A. M. Withsen, Chief
 Technical Branch

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CONTRACT NO. AT-30-1-GEN-366

Refer to this Contract as
Subcontract No. AT-24 on
G.E. internal correspondence.

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the Contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC."

1. This Agreement between Sylvania Electric Products Inc. (the 'Contractor'), and General Electric Company, ANP Department (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK:

The work hereunder is to be performed in accordance with Sylvania Electric Products Inc. proposal, dated December 31, 1953, GE-ANP Document # DCF 4480.

2. Except as follows, all of the provisions of said contract are applicable with respect to the work added hereby:

- (a) The Contractor shall furnish intermediate reports to the Sponsor from time to time, when requested, and in such form and number as may be required by the Sponsor concerning Contractor's activities hereunder, and shall make such final report as may be required by the Sponsor.
- (b) Any dispute arising hereunder with respect to financial matters or to the facts upon which a financial dispute is based, which is not disposed of by mutual agreement, shall be decided by representatives of the Commission, who shall reduce their decision to writing and mail copies thereof to both parties. The decision of the Commission's representative shall be final and conclusive upon all questions of fact, but questions of law, or mixed questions

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of law and fact, shall be subject to judicial review.

- (c) The Contractor shall incur no expenses in excess of the sum allocated hereunder without the express prior written approval of the Sponsor.
- (d) Technical guidance will be derived through conferences attended by the technical personnel of both the Contractor and Sponsor.

3. The fixed fee for the work added hereby is \$2,659.00.

4. Performance of the work shall end on February 28, 1955.

5. \$48,973.00 has been allocated for the work added hereby.
(See 4 b and 4 c of Article IV.)

6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.

By: /s/ W. E. Kingston

Title: General Manager, Atomic Energy Div.

Date: 4/19/54

APPROVED:

U. S. ATOMIC ENERGY COMMISSION
Lockland Area Office

By: /s/ E. M. Veltan

E. M. Veltan

Title: Area Manager

Date: May 7, 1954

GENERAL ELECTRIC COMPANY

By: /s/ D. R. Shoults

General Manager
Aircraft Nuclear Propulsion Dept.
Atomic Products Division

Date: 4-14-54

APPROVED:

U. S. ATOMIC ENERGY COMMISSION
New York Operations Office

By: /s/ H. B. Fry

H. B. Fry

Title: Manager

Date: _____

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NARA 000679

SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. Modification of AT-24
Date Rec'd by A. B. 3/2/68
Reviewed by [Signature]
Date Release by A. B. 3/1/68

Brief Description of Proposed Subcontract: set forth in Document DC 45-2-51 and DCF 5615 Addition of work

Does proposal include:

1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes (✓) no ()
2. Estimated cost of the subcontract exclusive of fee? yes (✓) no ()
3. List and details of firms considered? yes () no () na.
4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? yes (✓) no ()
5. Facilities available? yes (✓) no ()
6. Time factor involved. yes (✓) no ()
7. Equipment available, Delivery yes (✓) no ()
8. Discussion of availability of specifications and drawings. yes () no () na.
9. Is cost element complete -
Cost estimate:
a. Labor
b. Materials
c. Plant & Equipment
d. Overhead
e. Fee

} See DCF 5615 (#3)

Item No.	Remarks
3.	<u>Modification of existing agreement</u>
6.	<u>Expiration date - February 28, 1976</u>

On the basis of the above, Administrative Branch recommends:

Subcontract Exhibit #3
Subcontract Check List - Adminis

Approval
 Disapproval

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NARA 000574

M. Eisenbud, Manager,
New York Operations Office

March 8, 1955

H. K. Volten, Area Manager,
Lockland Area Office

**MODIFICATION NUMBER 1 TO SPONSORED TASK C-4 (SUBCONTRACT AT-24)
BETWEEN SYLVANIA ELECTRIC PRODUCTS AND GENERAL ELECTRIC COMPANY)**

We are enclosing for your review and approval three (3) copies of Modification Number 1 to Sponsored Task C-4 referred to as Subcontract AT-24 between Sylvania Electric Products and General Electric Company. The New York Operations Office should verify overhead, GA rates, and fee. The cost estimate as extracted from Sylvania Electric Products' proposal DOP-5615 is as follows:

Cost Estimate

1. <u>Direct Labor</u>		
Engineering & Engineering supervision	2500 hours	\$ 9,300
Technician Labor	1750 hours	3,500
Service Labor: (Metallography, X-Ray Testing Chemistry, Machine Shop, etc.)	2050 hours	5,700
Total Direct Labor		\$18,500
2. <u>Overhead at 110%</u>		20,350
3. <u>Direct charges & Prorated Expense Items*</u>		10,650
4. <u>General & Administrative Expense at 11.1%</u>		6,880
5. Total Estimated Operating Cost		\$56,380
6. <u>Fee</u>		6.00% 3,390
7. Total Operating Costs Plus Fee		\$59,770

*Direct charges include consumable materials, travel and the cost of irradiation services at Brookhaven. Prorated expense is the share of security, accountability, health and safety, etc., services allocable to this work.

Modification Number 1 to Sponsored Task C-4 attached hereto has been signed by Dr. Kingston of Sylvania, D. R. Shoults, General Manager, ANP Department and myself.

OFFICE ▶	Proc. Ass't.	Ch. Adm.	Br.	Ch. Fin.	Br.	Area Manager
SURNAME ▶	Backscheider	Holliday		Belanger		Volten
DATE ▶	3-8-55	3-8-55		3-8-55		3-8-55

Form AEC-818 (Rev. 9-43)

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M. Eisenbud

-2-

March 8, 1955

Please return two (2) signed copies to this office. We shall furnish you with as many confirmed copies of the fully executed agreement as you may require.

Thank you for your cooperation in this matter.

Enclosures:
Subj. Mat. #1 (3)

cc: V. J. Nicholas, GE-ANPD
Finance Branch, LAO

OFFICE ▶						
SURNAME ▶						
DATE ▶						

Form AEC-818 (Rev. 9-53)

U. S. GOVERNMENT PRINTING OFFICE 16-53761-5

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NARA 000573

2/18/55

Modification No. 1 to Sponsored Task C-4

	<u>Fee</u>	<u>Allocation</u>
Original Sponsored Task C-4	\$2,659	\$48,973
Modification No. 1 to Sponsored Task C-4	3,390	59,870
TOTAL	\$6,049	\$108,843

Refer to this Contract as AT-30-1-GEN-366 on
 Subcontract No. AT-34
 G.E. internal correspondence.

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT No. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and General Electric Company, ANP Department, the sponsor (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

As described in Contractor's proposal enclosed with letter from E. S. Norris to Walter Koshuba dated 2/18/55 Document No. DCF #5615.

2. Except as follows, all of the provisions of said Contract are applicable with respect to the work added hereby:

The provisions of the original Sponsored Task C-4 shall apply to this Modification No. 1.

(Note: Insert 'None' if applicable)

3. The fixed fee for the work added hereby is \$ 3,390.
4. Performance of the work shall end on 2/28/56.
5. \$ 59,870 has been 'allocated' for the work hereby. (See 4b and 4c of Article IV).

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6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.

By: /S/ W. E. Kingston
W. E. Kingston
Title: General Manager, Atomic Energy Div.

GENERAL ELECTRIC COMPANY

By: /S/ D. R. Shoults
Title: 3-1-55 General Manager

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION
By: /S/ F. M. Velten
E. M. Velten
Manager, Lockland Area Office
MAR 1 1955

Approved:

U. S. ATOMIC ENERGY COMMISSION
New York Operations Office
By: /S/ J. C. Clarke
J. C. Clarke
Title: Authorized Representative of the
U. S. Atomic Energy Commission
Date: _____

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SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. AT-24 Amend # 2

Date Rec'd by A.B. 2/3/56

Reviewed by B

Date Release by A.B. 2/3/56

Brief Description of Proposed Subcontract: Special work set forth in DCF-6128

Does proposal include:

- 1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes (X) no ()
- 2. Estimated cost of the subcontract exclusive of fee? yes (X) no ()
- 3. List and details of firms considered? yes () no () *na*
- 4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? yes (X) no ()
- 5. Facilities available? yes (X) no ()
- 6. Time factor involved. yes (X) no ()
- 7. Equipment available, Delivery yes () no ()
- 8. Discussion of availability of specifications and drawings. yes () no () *na*

*total cost
\$550.00*

- 9. Is cost element complete - Cost estimate:
 - a. Labor
 - b. Materials
 - c. Plant & Equipment
 - d. Overhead
 - e. Fee

See pp 4 of DCF-6128 for detailed cost breakdown.

10. Is work classified? Secret - RD yes (X) no ()

11. Has Security Branch reviewed subcontract, if classified? yes () no ()

Item No.	Amount	Remarks
2.	\$59,950.00	
4.	\$ 3600.00	
6.	February 28, 1957	one year term to begin 2/28/56

On the basis of the above, Administrative Branch recommends:

after Tech Br. review.

Subcontract Exhibit #3
Subcontract Check List - Administrative Branch

Approval
 Disapproval

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PROCUREMENT ACTION CHECK LIST

FOR FINANCE BRANCH
(Purchase Orders)

SUB #1 24
Purchase Order No. AMEND #2
For: SYLVANIA
Rec'd by F.B. 7.6.66
Review submitted by F.B. 7.6.66
Reviewed by: L.D. BEAVER

Item No.	Question	Yes	No.
1.	Does the arrangement come within the contract definitions of allowable costs?		
2.	Is the Account No. or Task No. properly reflected? a. Direct charge _____ b. Overhead charge _____ c. If overhead charge, does it have A/F approval _____?		
3.	Do the terms of payment agree with the Invitation to Bid Form and are the extensions correct?		
4.	Does the F.O.B. point on the Purchase Order form agree with that stated on the bid form?		
5.	Has any of the "Conditions of Purchase" articles appearing on the reverse of the P.O. Form been altered or deleted?		
6.	Is there any government furnished materials and equipment in connection with this arrangement?		
7.	If so, does the order clearly indicate a description of the material and equipment and the method of return of the equipment or residue to the contractor?		

Item No.	Remarks												
AMEND #1	<table border="0"> <tr> <td>CUH</td> <td>SDA</td> <td>PROVISIONAL</td> <td>YEE</td> </tr> <tr> <td>110.0%</td> <td>111.1%</td> <td></td> <td>6.007%</td> </tr> <tr> <td>✓ #2</td> <td>125.0%</td> <td>116.6%</td> <td>6.005%</td> </tr> </table>	CUH	SDA	PROVISIONAL	YEE	110.0%	111.1%		6.007%	✓ #2	125.0%	116.6%	6.005%
CUH	SDA	PROVISIONAL	YEE										
110.0%	111.1%		6.007%										
✓ #2	125.0%	116.6%	6.005%										
	SEE DEF 6128 FOR REASONS FOR INCREASED RATES.												

On the basis of the above the Finance Branch recommends APPROVAL

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NARA 000553

Subcontract No. AT-24 Amend #2

For: Special Work - DCF 6128

With: Sylvania

Rec'd. by T. B. 2-3-56

Review submitted by T. B. 2-3-56

Reviewed by: Ken Mills

New Renewal

Item No.	Question	Yes	No
1.	Are the ultimate objectives toward which the subcontract is directed adequately described, and are they appropriate to the prime contractor's effort?	✓	
2.	Are the specific objectives of the subcontract reasonably bounded?	✓	
3.	Is a specific method of approach and schedule established for accomplishing the statement of work?	✓	
4.	Are drawings and specifications clear and concise?	✓	
5.	Is a definite end item required or is contractor's best effort specified?	✓	
6.	Has the necessity for the subcontract work been satisfactorily demonstrated?	✓	
7.	Is there a reasonable expectation that the subcontract will satisfy all technical requirements?	✓	✓
8.	Does the procurement require technical liaison between contractor and subcontractor or vendor?	✓	
9.	Is provision made for technical control by contractor over subcontractor?	✓	
10.	Does the subcontractor require access to classified information? What is the highest classification anticipated? 1. Negotiations - <i>Unclassified</i> 2. Documents - <i>Secret RD</i> 3. Work - <i>Secret RD</i> 4. Material - <i>Secret RD</i>	✓	
11.	Are radiation or health hazards involved?	✓	
12.	Were all bidders furnished same specifications?	✓	NA
13.	Is the subcontractor's bid based on meeting all specifications, including time limit?	✓	
14.	Is the proposed subcontractor competent and reputable?	✓	

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NARA 000554

Item No.	Remarks (con't)
7	There is no basis for assumption that work will be successful; however, any information obtained will be of extreme importance.

On the basis of the above, the Technical Branch recommends:

- Approval
 Disapproval
 Additional information required
 Alternate Source

Explanation: _____


 L. R. Standifer, Jr., Chief
 Technical Branch

... subcontractor competent and reputable?

NARA II
 25 326
 Accession 4KR
 326 83 -CO6
 Records covering the
 establishment of the
 production of the
 Lockheed Hercules
 1950-1961
 NA 14070 (9-87)
 Box 82

NARA 000555

1/30/56 Modification No. 2 to Sponsored Task C-4

	Fee	Allocation
Previous Total	\$6,049	\$108,843
Modification No. 2	3,600	63,550
Total	\$9,649	\$172,393

Refer to this Contract as AMEND #2
 Subcontract No. AT-24 on
 G.E. internal correspondences.

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and General Electric Company, ANP Department (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

As described in Contractor's proposal enclosed with letter from E. S. Morris to A. Focke dated 1/30/56, DCF #6128.

2. Except as follows, all of the provisions of said Contract applicable with respect to the work added hereby:

The provisions of the original Sponsored Task C-4 shall apply to this Modification No. 2.

(Note: Insert 'None' if applicable)

3. The fixed fee for the work added hereby is \$3,600.
4. Performance of the work shall end on February 28, 1957.
5. \$ 63,550 has been (insert 'obligated' if the Commission is the party, or 'allocated' if a Sponsor is involved) for the work hereby. (See 4b and 4c of Article IV.)

C-1

NARA II
 RG 326
 Accession 4KR
 326 93-006
 Records covering the
 establishment
 operation of the
 Lockland Area Office
 1950-1961
 Box 82

6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.
By: W. B. Kingdon
W. B. Kingdon, General Manager
Title: Atomic Energy Division

GENERAL ELECTRIC COMPANY
By: D. J. [Signature] 2/28/56
Title: General Manager - ANP Department

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION
By: E. M. Velten
E. M. Velten
Area Manager
Lockland Area Office

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION
By: [Signature]
[Signature]
REPRESENTATIVE OF THE
U. S. ATOMIC ENERGY COMMISSION
New York Operations Office

NARA II
RG 326
Accession 4KR
326 83-006
Records covering the
establishment
operation of the
Lockland branch
1950-1961.
Box 82
NARS 1407 (9-57)

GENERAL ELECTRIC SUBCONTRACT AT-24
MODIFICATION NO. 3

SPONSORED TASK NO. C-4
MODIFICATION NO. 3

CONTRACT AT(30-1)-GEN-366

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

This Modification entered into the 13th day of November, 1958 between PENNSYLVANIA-CORNING NUCLEAR CORPORATION (the "Contractor"), and GENERAL ELECTRIC CO.; AIRCRAFT NUCLEAR PROPULSION DEPARTMENT (the "Sponsor"):

WITNESSETH:

WHEREAS, the parties hereto have heretofore entered into a certain agreement, known and designated as Sponsored Task C-4 and Subcontract AT-24 (hereinafter called the Agreement), such agreement having been entered into on April 14, 1954; and

WHEREAS, the parties hereto are desirous of modifying and supplementing said agreement;

NOW THEREFORE, the Contractor and the Sponsor do mutually agree as follows:

- 1. Paragraph 5 is modified by allocating an additional amount of \$860.31 for the work. The revised amount of the agreement is now as follows:

	<u>AGREEMENT AMOUNT</u>		
	<u>Estimated Cost</u>	<u>Fixed Fee</u>	<u>Total</u>
Allocated Thru Mod. #2	\$162,744.-	\$9,649.-	\$172,393.-
This Modification No. 3	860.31	-	860.31
Revised Total per this Modification	\$163,604.31	\$9,649.-	\$173,253.31

Except as otherwise provided in this Modification No. 3, all the provisions of the agreement as heretofore modified or supplemented shall remain in full force and effect.

NARA II
 RG 326
 Accession 4KR
 326 83-CC6
 Records covering the
 establishment
 operations of the
 Lockheed Aircraft
 1950-1961
 Box 82
 NA 14070 (9-87)

NARA 000641

This Modification will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA-CORNING NUCLEAR CORPORATION

By: Garth W. Edwards
Garth W. Edwards
Title: Controller

GENERAL ELECTRIC COMPANY

By: F. E. Knapp
F. E. Knapp
Title: Purchasing Agent
Date: MAY 27 1960

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION

By: J. L. Wilson
J. L. Wilson, Manager
~~Lockland Aircraft Reactors Operations Office~~
Date: U. S. Atomic Energy Commission

JUL 8 1960

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE

By: John D. Hart
Date: ...



NARA II
RG 326
Accession 4KR
326-93-CC6
Records cover the
establishment
operation of the
Lockland Reactor
1950-1961
NA 14070 (9-87)
Box 82

NARA 000642

flcorp nuclear

Sponsored Task C-4
Subcontract No. AT-24

SUBCONTRACT CHECK LIST

PROCUREMENT MANAGEMENT BRANCH

Date Rec'd by FMB 6/1/60

Reviewed by B

Date Released by FMB 6/2/60

Brief Description of Proposed Subcontract: Final costs as determined by ABC Audit

1. Type of contract - CPFF, L/H, TM, Consultant, etc. Sponsored agreement under AT(30-1)-Gen-366
2. Any changes in standard format? no
3. Does file contain detailed statement of services, equipment, materials or supplies to be furnished? na
4. Estimated cost of the subcontract, fee and allotted sum na
5. Period of contract na
6. Does file contain cost breakdown furnished by vendor? na
7. Is work classified? na
8. Has Classification & Information reviewed the subcontract if classified? na

Remarks

On the basis of the above, Procurement Management Branch recommends:

with Finance Dir approval

Approval

Form ABC-LAR 51
(Rev. 5-60)

NARA II
 RG 326
 Accession 4KR
 32683-006
 Records covering the
 establishment
 operation of the
 Lockland Farm No.
 1950-1961
 NA 14070 (9-57)
 Box 82

NARA 000546

John D. Hart, Contract Administrator
Contracts Division, New York Operations Office

September 13, 1960

M. W. Holliday, Chief, Procurement Management Branch
Lockland Aircraft Reactors Operations Office

MODIFICATION NO. 14 TO GE SUBCONTRACT AT-38 AND AMENDMENT NO. 3
TO GE SUBCONTRACT AT-24

PMB:JEB

As requested in your memorandums of September 6, 1960, we are enclosing one (1) signed and two (2) conformed copies of each of the subject documents for your records.

Enclosure:

Mod. 14 (3)
Amend. 3 (3)

Ast.Ch.PMB Ch.PMB

BACKSCHKIDER/lam HOLLIDAY

9-13-60

NARA II
RG 326
Accession 4KR
326 83 -006
Records covering the
establishment
operation of the
Lockland Atomic
1950-1961
NA 14070 (9-8-57)
Box 82

NARA 000538

AT-3

SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. Appendix "C"
Contract AT-30-1-SEN-366
Date Rec'd by A. B. _____

Reviewed by _____

Date Release by A. B. _____

Brief Description of Proposed Subcontract: Special work to be performed in accordance with outline contained in DC-55-4-117

Does proposal include:

- 1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes () no ()
- 2. Estimated cost of the subcontract exclusive of fee? yes () no ()
- 3. List and details of firms considered? yes () no ()
- 4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? no yes () no ()
- 5. Facilities available? yes () no ()
- 6. Time factor involved. yes () no ()
- 7. Equipment available, Delivery yes () no ()
- 8. Discussion of availability of specifications and drawings. yes () no () na.
- 9. Is cost element complete -
Cost estimate:
a. Labor
b. Materials See attached
c. Plant & Equipment Cost BKdn.
d. Overhead
e. Fee

Item No.	Amount	Remarks
2.	\$ 23,200. ⁰⁰	
4.	\$ 1,390. ⁰⁰	
6.		Reference memo to file - J. B. Keckholder dated April 14, 1955 - (last page) Expire 4 months after subcontract approved by AEC. On the basis of the above, Administrative Branch recommends:
5.		<input checked="" type="checkbox"/> Approval <input type="checkbox"/> Disapproval Subcontract Exhibit #3 Subcontract Check List - Adminis
7.		

NARA II
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 Accession 4KR
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 Records covering the
 establishment
 operations of the
 Leikland branch
 1950-1961
 Box 72
 NA 1470 (9-57)

SUBCONTRACT PROCUREMENT CHECK LIST
FOR TECHNICAL BRANCH

Subcontract No. Appendix "C" Cont. AT-30-1-GEN-1
 For: Special work to be performed in accordance
outline contained in DG-55-4-117
 With: _____
 Rec'd. by T.B. 5-28-55
 Review submitted by T.B. _____
 Reviewed by: S. M. Neugebauer
 New Renewal

Item No.	Question	Yes	No
<u>A. Description</u>			
1.	Are the ultimate objectives toward which the subcontract is directed adequately described?	✓	
2.	Are the specific objectives of the subcontract reasonably bounded so as to clearly indicate its relationship to the primary effort (i.e. of the prime contractor)?	✓	
3.	Are these objectives appropriate to the time and expense to be devoted to their attainment?	✓	
4.	Has a work schedule been established for the various phases of the subcontract?	✓	
5.	Is a specific method of approach given for accomplishing the statement of work?	✓	
6.	Are drawings and specifications clear and concise?	✓	
7.	Is it anticipated that this subcontract will require renewal?		✓
8.	Is a definite end item required or is contractor's best effort specified?	✓	
<u>B. Justification</u>			
9.	Has the necessity for the subcontract work been satisfactorily demonstrated?	✓	
10.	Is there a reasonable expectation that the subcontract will meet the technical requirements set forth in the subcontract?	✓	
11.	Have alternate plans been considered for meeting these requirements?	✓	
<u>C. Contractor-Subcontractor Relations</u>			
12.	Does the procurement require technical liaison between contractor and subcontractor or vendor?	✓	

NARA II
 326 326
 Accession 4KR
 326 33-106
 Records cover the
 establishment
 of functions of the
 Lockheed L-104
 1950-1961
 Box 72
 NA 14070 (9 87)

Item No.	Question	Yes	No
13.	Is provision made for modifying the objectives of the subcontractor with respect to changes, termination in part or completely, or additions calling for delivery of special items or services?	✓	
<u>D. Security and Safety</u>			
14.	Does the procurement require the vendors access to classified information or restricted data in the form of drawings, specifications, mock-ups or other information?	✓	
15.	What is highest security classification anticipated on work?	S-RD	
16.	Is it possible to declassify any portions of the work?	✗	✓
17.	Are radiation or health hazards involved?	✗	✓
<u>E. Selection of Subcontractor</u>			
18.	Were all bidders furnished same specifications?	✓	
19.	Were any possible bidders rejected because of lack of "Q" cleared personnel?		✓
20.	Is the subcontractor's bid based on meeting all specifications, including time limit?	✓	
21.	Does the successful bidder's delivery date depend on priorities?		✓
22.	Are any lump sum purchase orders of a similar nature open to the subcontractor? a. with AEC? b. with other government agencies?		✓ ✓ ✓
23.	Is there question as to the subcontractor's ability to accomplish this work?		✓
Item No.	Remarks		

~~18~~ ~~19~~

NARA II
86 326
Accession 4KR
326 87-206
Records Commission
established
"Priority of
work to be done
1950-1961
Box 72

Item No.	Remarks (con't)

On the basis of the above, the Technical Branch recommends:

- Approval
 Disapproval
 Additional information required
 Alternate Source

Explanation: _____


 A. H. Frittsen, Chief
 Technical Branch

NARA II
 RG 326
 Accession 4KR
 326 93-206
 Records covering the
 establishment
 operation of the
 Lockwood Institute
 1950-1961
 NA 1070 (9-57)
 Box 72

NARA 000528

Refer to this Contract as
Subcontract No. AT-30 on
G.E. internal correspondence.

CONTRACT NO. AT-30-1-GEN-366

Sponsored Task C-34

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the Contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC."

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and General Electric Company, ANP Department (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK:

The work hereunder shall be performed in accordance with the requirements and provisions contained in the following documents, which are hereby incorporated by reference and made a part hereof: (1) General Electric Company's Invitation to Bid, dated April 20, 1955, identified as classified document DC 55-4-117, (2) Sylvania's letter proposal, dated May 10, 1955, from Mr. E. S. Norris to Mr. J. F. Patrouch, and (3) Sylvania's technical proposal, identified as classified document DCF 5802.

2. Except as follows, all of the provisions of said contract are applicable with respect to the work added hereby:

- (a) The Contractor shall furnish intermediate reports to the Sponsor from time to time, when requested, and in such form and number as may be required by the Sponsor concerning Contractor's activities hereunder, and shall make such final report as may be required by the Sponsor.
- (b) Any dispute arising hereunder with respect to financial matters or to the facts upon which a financial dispute is based, which is not disposed of by mutual agreement, shall be decided by representatives of the Commission, who shall reduce their decision to writing and mail copies thereof to both parties. The decision of the Commission's representative shall be final and conclusive upon all

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Accession 4KR
326 93-506
Records covering the
establishment
operation of the
Lockheed Aircraft
NA 14070 (9-57)
Box 72

NARA 000521

questions of fact, but questions of law, or mixed questions of law and fact, shall be subject to judicial review.

- (c) The Sponsor shall not be liable to the Contractor for any amount in excess of the sum allotted hereunder without the express prior written approval of the Sponsor.
- (d) Technical guidance will be derived through conferences attended by the technical personnel of both the Contractor and Sponsor.

3. The Sponsor will pay the Contractor a fixed fee of \$1,390.00 for performance of the work hereunder.

4. The Contractor has estimated the cost of the work hereunder to be \$23,200.00.

5. The sum of \$24,590.00 has been allotted for performance of the work hereunder (See 4 b and 4 c of Article IV).

6. This Agreement shall expire four (4) months after the date on which the Contractor receives the material which is to be furnished by the Sponsor. It is estimated that such material can be delivered to the Contractor on or about June 13, 1955.

7. This Agreement shall become effective on the day it is approved in writing by the New York Operations Office of the Commission. However it shall not be binding unless approved in writing by the Lockland Area Office of the Commission.

APPROVED:

U. S. ATOMIC ENERGY COMMISSION
Lockland Area Office

By: E. M. Velten
E. M. Velten
Title: Area Manager
Date: JUN 29 1955

SYLVANIA ELECTRIC PRODUCTS, INC.

By: W. E. Kingston
W. E. Kingston, General Manager
Title: Atomic Energy Division
Date: June 23, 1955

APPROVED:

U. S. ATOMIC ENERGY COMMISSION
New York Operations Office

By: D. R. Shoults
AUTHORIZED REPRESENTATIVE OF THE
Title: U. S. ATOMIC ENERGY COMMISSION
Date: JUL 11 1955

GENERAL ELECTRIC COMPANY

By: D. R. Shoults
Mr. D. R. Shoults, General Manager
Aircraft Nuclear Propulsion Dept.
Atomic Products Division
Date: 6-14-55

NARA II
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Accession 4KR
326 87-000
Records covering the
establishment
operation of the
Lockland Area Office
1950-1961
Box 7Z
N 14070 (9-87)

SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. AT-30 amend #1
Date Rec'd by A. B. 11/4/55
Reviewed by B
Date Release by A. B. 11/14

Brief Description of Proposed Subcontract: Extend delivery date and add funds.

Does proposal include:

1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes () no ()
2. Estimated cost of the subcontract exclusive of fee? yes () no ()
3. List and details of firms considered? yes () no ()
4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? yes () no ()
5. Facilities available? yes () no ()
6. Time factor involved. yes () no ()
7. Equipment available, Delivery yes () no ()
8. Discussion of availability of specifications and drawings. yes () no ()
9. Is cost element complete - Cost estimate:
 - a. Labor
 - b. Materials
 - c. Plant & Equipment
 - d. Overhead
 - e. Fee

m No.	Remarks
	<p>This amend #1 was discussed at meeting held on Nov 1 - Remick, Holliday, Palmetto, Paulsbrieder = Nicholas, Maloney & Bebler of S.S. - AWP. Since Sylvania had not begun special work until after original expiration date - it was decided to permit</p>

On the basis of the above, Administrative Branch recommends Sylvania an extension of time, especially affecting delivery dates.

over

Subcontract Exhibit #3
Subcontract Check List - Administrative



Approval

NARA II
RG 326

Accession 4KR
326 83 - 006

Records covering the establishment

of Printing at the
Lockland Institute

1950-1961

Box 72

NA 14070 (9-57)

Sylvania indicated \$ 126-th that additional funds would be required to complete the work. See tele type from Sylvania to Nicholas dated Nov 11, 1955 showing estimated costs thru Dec.

NARA II
R6 326
Accession 4KR
32693-006
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operation of the
Lockland Institute
1950-1961
NA 14070 (9-87)
Box 72

NARA 000515

PROCUREMENT ACTION CHECK LIST

FOR FINANCE BRANCH
(Purchase Orders)

AMENDMENT
Purchase Order No. 1 TO SUB-CONTRACT A130
For: ADDITIONAL FUNDS
Rec'd by F.B. 11-16-55
Review submitted by F.B. 11-16-55
Reviewed by: V. D. Blawie

Item No.	Question	Yes	No.
1.	Does the arrangement come within the contract definitions of allowable costs?	✓	
2.	Is the Account No. or Task No. properly reflected? a. Direct charge <u>✓</u> b. Overhead charge _____ c. If overhead charge, does it have A/F approval _____?		
3.	Do the terms of payment agree with the Invitation to Bid Form and are the extensions correct?		
4.	Does the F.O.B. point on the Purchase Order form agree with that stated on the bid form?		
5.	Has any of the "Conditions of Purchase" articles appearing on the reverse of the P.O. Form been altered or deleted?		
6.	Is there any government furnished materials and equipment in connection with this arrangement?		
7.	If so, does the order clearly indicate a description of the material and equipment and the method of return of the equipment or residue to the contractor?		
Item No.	Remarks		

On the basis of the above the Finance Branch recommends APPROVAL

NARA II
RG 326
Accession 4KR
326 93-006
Records covering the
operation of the
Lockland branch
1950-1961.
NA 14070 (9-57)
Box 72

NARA 000512

Office Memorandum • UNITED STATES GOVERNMENT

TO : J. W. Backscheider, Procurement Assistant,
 Administrative Branch, Lockland Area Office

DATE: November 16, 1955

FROM : T. A. Neazek, Acting Chief, Technical Branch, Lockland Area Office *DAN*

SUBJECT: PROPOSED AMENDMENT NUMBER 1 TO SUBCONTRACT AT 30 WITH SYLVANIA ELECTRIC PRODUCTS

CKLAND	
MGR	
VMGR	
ADM	
TEC	
SEC	
FIN	
<i>✓</i>	
FILE	

We have reviewed the subject amendment and have no grounds for objection to the extension of the contract dates. However, in our opinion, it is doubtful that Sylvania will meet the November 21 date for delivery of roughly one half of the material ordered.

NARA II
 RG 326
 Accession 4KR
 326 83-006
 Records covering the
 establishment
 operation of the
 Lockland branch
 1950-1961
 NA 1070 (9-57)
 Box 72

December 19, 1955

Mr. V. J. Nicholas
Supervisor - Subcontracts
GE - AMP Department
P. O. Box 132
Cincinnati 15, Ohio

Subject: AMENDMENT NO. 1 TO SPONSORED TASK C-34 (SUBCONTRACT AT-30)
BETWEEN GENERAL ELECTRIC COMPANY AND PENNSYLVANIA ELECTRIC
PRODUCTS, INC.

Dear Mr. Nicholas:

We are returning two (2) copies of the subject amendment which have
been approved by this office and the New York Operations Office.

Please furnish us with five (5) conformed copies of this amendment
number 1 in order that we may make distribution within the AEC.

We should also be furnished with a supplemental 328 card in accordance
with Contract Reporting Procedures set forth in Chapter 91.27 of the
AEC Manual.

Very truly yours,

J. W. Backscheider
Procurement Assistant

Enclosure:
Subject Amendment (2)

OFFICE ▶	Proc. Asst.					
SURNAME ▶	Backscheider/erb					
DATE ▶	12-19-55					

Form AEC-818 (Rev. 9-53)

U. S. GOVERNMENT PRINTING OFFICE 16-92761-3

12.61 3

NARA II
RG 326
Accession 4KR
326 83-006
Records covering the
establishment
operation of the
Lockland
1950-1961
NA 14070 (9-57)
Box 12

NARA 000505

Amendment No. 1 to Sponsored Task C-24
Subcontract AT-30

	<u>Fee</u>	<u>Allocation</u>
Previous Totals	\$1390	\$24,590
This Amendment	---	2,500
Now Totals	\$1390	\$27,090

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT No. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and General Electric Company, ANP Department (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

Completion of work described in Sponsored Task C-24, per C. L. Huffine's letter dated November 3, 1955, in accordance with classified documents DC 55-4-117, dated April 20, 1955 and DCF 5402 dated May 10, 1955. A total of 650 units are to be delivered to GE-ANPD by 11-21-55 and the balance by 12-23-55.

2. Except as follows, all of the provisions of said Contract applicable with respect to the work added hereby:

None

(Note: Insert 'None' if applicable)

3. The fixed fee for the work added hereby is \$ None.

4. Performance of the work shall end on December 23, 1955.

5. \$ 2,500 has been (insert 'obligated' if the Commission is the party, or 'allocated' if a Sponsor is involved) for the work hereby. (See 4b and 4c of Article IV.)

C-1

Encl 1³

NARA II
RG 326
Accession 4KR
326 83 -006
Records covering the
establishment of
SPrinting of the
Lockland Machine
1950-1961
N 1407
(28) 0107
Box 72

6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.

By: W. E. Kingston
W. E. Kingston, General Manager
Title: Atomic Energy Division

D. R. Shoults
By: D. R. Shoults
Title: General Manager
Aircraft Nuclear Propulsion Dept.

Approved:
New York Operations Office
UNITED STATES ATOMIC ENERGY COMMISSION
By: J. C. Clarke
Title: J. C. CLARKE
AUTHORIZED REPRESENTATIVE OF THE
U. S. ATOMIC ENERGY COMMISSION
Date: _____

DEC 13 1955

Approved:
UNITED STATES ATOMIC ENERGY COMMISSION
Oakland Area Office
By: M. W. Holliday
Title: Acting Area Manager
Date: NOV 17 1955

C-2

NARA II
RG 326
Accession 4KR
326 93-206
Records covering the
establishment
operation of the
Lockland Area Office
1950-1961
Box 72
NA 14070 (8-57)

SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. AT-30

Date Rec'd by A. B. 12/19/55

Reviewed by B

Date Release by A. B. 12/20/55

Brief Description of Proposed Subcontract: Add funds (no fee)
To complete work in amount of \$16,000.00

Does proposal include:

1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes () no ()
2. Estimated cost of the subcontract exclusive of fee? yes (/) no ()
3. List and details of firms considered? yes () no ()
4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? yes () no () na
5. Facilities available? yes () no ()
6. Time factor involved. yes () no () na
7. Equipment available, Delivery yes () no ()
8. Discussion of availability of specifications and drawings. yes () no () na
9. Is cost element complete -
Cost estimate:
a. Labor
b. Materials
c. Plant & Equipment
d. Overhead
e. Fee

Item No.	Remarks
	<p><u>Sylvania</u> This amendment #2 adds 16,000. in order for <u>Sylvania</u> to complete the work. <u>no additional fee.</u></p>

On the basis of the above, Administrative Branch recommends:

Subcontract Exhibit #3
Subcontract Check List - Administrative Branch

Approval
 Disapproval

NARA II
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 Accession 4KR
 326 83-006
 Records covering the
 establishment
 operation of the
 Lockland branch
 1950-1961.
 NA 14070 (9-87)
 Box 72

PROCUREMENT ACTION CHECK LIST

FOR FINANCE BRANCH

(Purchase Orders)

AMENDMENT

Purchase Order No. 2 SUB CONTRACT A130

For: SYLVANIA ELECTRIC PRODUCTS

Rec'd by F.B. 12-23-55

Review submitted by F.B. 12-23-55

Reviewed by: L.D. Blawie

Item No.	Question	Yes	No.
1.	Does the arrangement come within the contract definitions of allowable costs?	✓	
2.	Is the Account No. or Task No. properly reflected? a. Direct charge <u>✓</u> b. Overhead charge _____ c. If overhead charge, does it have A/F approval _____?		
3.	Do the terms of payment agree with the Invitation to Bid Form and are the extensions correct?		N/A
4.	Does the F.O.B. point on the Purchase Order form agree with that stated on the bid form?		N/A
5.	Has any of the "Conditions of Purchase" articles appearing on the reverse of the P.O. Form been altered or deleted?		N/A
6.	Is there any government furnished materials and equipment in connection with this arrangement?	✓	
7.	If so, does the order clearly indicate a description of the material and equipment and the method of return of the equipment or residue to the contractor?		

Item No. Remarks

THE REASONS FOR REQUESTING AN ADDITIONAL \$10,000 TO BE STATED IN TORQUENA DEL 6041 AND APPEAR REASONABLE. NO ADDITIONAL FEE IS AUTHORIZED. COSTS ARE TO BE ADJUSTED AFTER COMPLETION. SEE ATTACHED COST ESTIMATE BREAKDOWN.

On the basis of the above the Finance Branch recommends APPROVAL

NARA II
RG 326
Accession 4KR
326 93-006
Records covering the
establishment
operation of the
Lockland Institute
1950-1961.
NA 14070 (9-87)
Box 72

NARA 000499

SYLVANIA ELECTRIC PRODUCTS INC.
Atomic Energy Division
Bayside, New York

Sponsored Task C-34
GE/ANP Subcontract AT-30

Cost Estimate for Completion of Work - November 20 to December 23

	<u>To Complete</u> <u>First 650 Units</u>	<u>To Fabricate</u> <u>Balance of 550 Units</u>
Direct Labor		
Engineering and Engineering Supervision	584 hrs. \$ 1,955	352 hrs. \$ 1,228
Technician Labor	468 hrs. 935	432 hrs. 863
Service Labor (Machine Shop)	350 hrs. 875	500 hrs. 1,265
TOTAL DIRECT LABOR	3,765	3,356
Overhead @ 125%	4,705	4,395
Prorated Expenses	940	775
Consumable Materials	--	250
G & A @ 14.6%	1,375	1,170
Machine Shop Charges at Hicksville Plant (100 hrs.)	--	795
TOTAL ESTIMATED COST	\$10,785	\$ 9,946

NARA II
R/S 326
Accession 4KR
326 83-006
Records cover the
establishment
operation of the
Lockheed Aircraft
1950-1961.
NA 14070 (S 87)
Box 72

NARA 000503

Sylvania Elec. Prod.
 Subcontract No. AT-30 (12-19-55)

~~XXXX~~ To add funds (no fee) to complete work in amount of \$16,000 (under para 2-Art. I, Appendix C - AT(30-1) GEN 366

With: Sylvania Electric Prod.

Rec'd. by T. B. 12-20-55

Review submitted by T. B. _____

Reviewed by: RAM

New

Renewal

Item No	Question	Yes	No
1.	Are the ultimate objectives toward which the subcontract is directed adequately described, and are they appropriate to the prime contractor's effort?	✓	
2.	Are the specific objectives of the subcontract reasonably bounded?	✓	
3.	Is a specific method of approach and schedule established for accomplishing the statement of work?	✓	
4.	Are drawings and specifications clear and concise?	NA	
5.	Is a definite end item required or is contractor's best effort specified?	✓	
6.	Has the necessity for the subcontract work been satisfactorily demonstrated?	✓	
7.	Is there a reasonable expectation that the subcontract will satisfy all technical requirements?	✓	
8.	Does the procurement require technical liaison between contractor and subcontractor or vendor?	✓	
9.	Is provision made for technical control by contractor over subcontractor?	✓	
10.	Does the subcontractor require access to classified information? What is the highest classification anticipated? 1. Negotiations - U 2. Documents - S-RD 3. Work - S-RD 4. Material - S-RD		✓
11.	Are radiation or health hazards involved?		
12.	Were all bidders furnished same specifications?	NA	
13.	Is the subcontractor's bid based on meeting all specifications, including time limit?		
14.	Is the proposed subcontractor competent and reputable?	✓	

NARA II
 RG 326
 Accession 4KR
 326 83-006
 Records covering the
 establishment
 operation of the
 Lockheed Aircraft
 1950-1961.
 NA 14070 (9-87)
 Box 72

NARA 000500

Item No.	Remarks (con't)
	<p>We insisted that every effort be made to deliver the material as close to the estimated date as possible. TAM bid (60,000+) was still higher than the total \$2,000 cost of Sylvania</p>

On the basis of the above, the Technical Branch recommends:

Approval

Disapproval

Additional information required

Alternate Source

Explanation: _____

L. R. Standifer, Jr.
L. R. Standifer, Jr. Chief
Technical Branch

NARA II
RG 326
Accession 4KR
32683-006
Records covering the
establishment
operation of the
Lockheed from the
1950-1961.
NA 14070 (9-87)
Box 72

NARA 000501

E. O. Ross, Assistant General Counsel
Chicago Operations Office

March 19, 1956

Mr. W. Holliday, Chief, Administrative
Branch, Lockland Area Office

AMENDMENT NO. 2 - SUBCONTRACT AT-30 - SYLVANIA ELECTRIC PRODUCTS, INC.

I am enclosing three (3) conformed copies of Amendment No. 2 to
Sponsored Task C-3h (referred to as Subcontract AT-30) between
Sylvania Electric Products, Inc. and General Electric Company.

This Amendment No. 2 adds \$16,000 to the cost of work (but does
not involve additional fee) raising the total allocation under
this agreement to \$43,090. Work under this Sponsored Task C-3h
was completed effective December 23, 1955.

Enclosure:

Amendment No. 2 to
Sponsored Task C-3h (3)

NARA II
RG 326
Accession 4KR
326 83-006
Records covering the
establishment
operation of the
Lockland Area Office
1950-1961.
Box 72
NA 14070 (2-57)

Amendment No. 2 to Sponsored Task C-34
Subcontract AT-30

	Fee	Allocation
Previous Totals	\$1390	\$27,090
This Amendment	---	16,000
New Totals	\$1390	43,090

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT No. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and General Electric Company, ANP Department (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

Completion of work described in Sponsored Task C-34.

2. Except as follows, all of the provisions of said Contract applicable with respect to the work added hereby:

None

(Note: Insert 'None' if applicable)

3. The fixed fee for the work added hereby is \$ None.

4. Performance of the work shall end on December 30, 1955.

5. \$ 16,000 has been (insert 'obligated' if the Commission is the party, or 'allocated' if a Sponsor is involved) for the work hereby. (See 4b and 4c of Article IV.)

C-1

NARA II

RG 326

Accession 4KR

326 93 -006

Records cover the

establishment

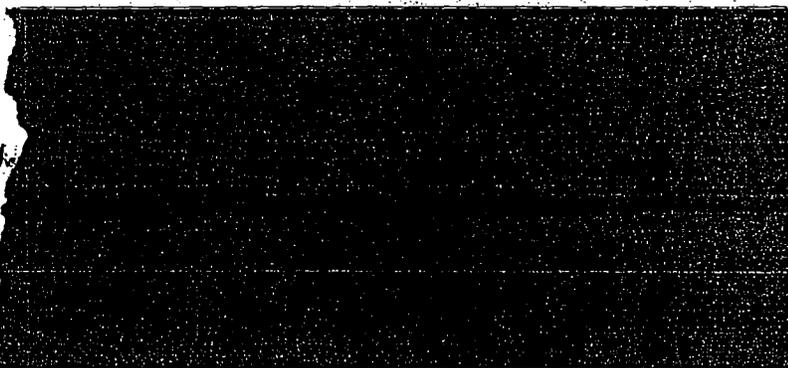
operation of the

Lockland Area Office

1950-1961.

Box 72

MA 14070 (8-57)



6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.

Approved:
New York Operations Office
UNITED STATES ATOMIC ENERGY COMMISSION
By: [Signature]

By: W. E. Kingston
W. E. Kingston, General Manager
Title: Atomic Energy Division

D. C. CLARKE
AUTHORIZED REPRESENTATIVE OF THE
U. S. ATOMIC ENERGY COMMISSION

By: D. R. Shoults
D. R. Shoults, General Manager
Title: aircraft Nuclear Propulsion Dept.
Atomic Products Division

Approved:
UNITED STATES ATOMIC ENERGY COMMISSION
By: E. M. Velten
E. M. Velten, Area Manager
Lockland Area Office

SUBCONTRACT CHECK LIST
ADMINISTRATIVE BRANCH

Subcontract No. AT-30 Amend # 3

Date Rec'd by A.B. 5/15/56

Reviewed by [Signature]

Date Release by A.B. 5/18/56

Brief Description of Proposed Subcontract: to original cost of work add funds (no fee)

Does proposal include:

- 1. Detailed statement of services, equipment, materials, or supplies to be furnished? yes () no (Yea)
- 2. Estimated cost of the subcontract exclusive of fee? yes (X) no ()
- 3. List and details of firms considered? yes () no (Yea)
- 4. Statement of proposed maximum fee to be paid and basis on which proposed fee is based? yes () no (None)
- 5. Facilities available? yes () no (Yea)
- 6. Time factor involved. yes () no (Yea)
- 7. Equipment available, Delivery yes () no (Yea)
- 8. Discussion of availability of specifications and drawings. yes () no (Yea)
- 9. Is cost element complete -
Cost estimate:
a. Labor
b. Materials
c. Plant & Equipment
d. Overhead
e. Fee
- 10. Is work classified? yes (X) no ()
- 11. Has Security Branch reviewed subcontract, if classified? yes () no ()

Item No.	Remarks
	<u>add \$7000 to allocated funds = old total 43090 add 7000 <u>50090</u></u>

On the basis of the above, Administrative Branch recommends:

Subcontract Exhibit #3 Approval
Subcontract Check List - Administrative Branch Disapproval

NARA II
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Accession 4KR
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Records covering the
establishment &
operation of the
Lockland from the
1950-1961.
NA 14070 (9-87)
Box 77

FINANCE BRANCH

(Purchase Orders)

AMEND #3 PENNSYLVANIA
 For: adding funds to original cost of work
 Rec'd by F.B. 5-21-56
 Review submitted by F.B. 5-21-56
 Reviewed by: Elkramer

Item No.	Question	Yes	No.
1.	Does the arrangement come within the contract definitions of allowable costs?	✓	
2.	Is the Account No. or Task No. properly reflected? a. Direct charge <u>✓</u> b. Overhead charge _____ c. If overhead charge, does it have A/F approval _____?		
3.	Do the terms of payment agree with the Invitation to Bid Form and are the extensions correct?		N/A
4.	Does the F.O.B. point on the Purchase Order form agree with that stated on the bid form?		N/A
5.	Has any of the "Conditions of Purchase" articles appearing on the reverse of the P.O. Form been altered or deleted?		N/A
6.	Is there any government furnished materials and equipment in connection with this arrangement?	✓	
7.	If so, does the order clearly indicate a description of the material and equipment and the method of return of the equipment or residue to the contractor?		

Item No. Remarks

The reasons for requesting an additional \$7,000.00 are stated in a letter dated Feb 20, 1956 from E. S. Norris (Sylvania Controller) to J. F. Ballen (ANPD Subcontracts Administrator). These reasons appear reasonable, no additional fee is authorized. Costs will be audited after completion. Sylvania would not go along with GE's idea of processing the amendment based on actual costs verified by AEC audit.

On the basis of the above the Finance Branch recommends Approval
 Disapproval
 ac Payable (E. S. Norris) stated that expenditures to date have been \$29,889.68 + invoice on hand of \$169.42 = total of \$30,059.10.

NARA II
 RG 326
 Accession 4KR
 326 93-006
 Records covering the establishment & operation of the Lockland Area Office 1950-1961.
 NA 1070 (9-8-57)
 Box 72

NARA 000485

Subcontract No. AT-30 (Amend #3)

~~XXXX~~ To add funds (no fee) to
original cost of work

With: Sylvania Elec. Prod., Inc.

Rec'd. by T. B. 5-18-56

Review submitted by T. B.

Reviewed by: [Signature]

New Renewal

Item No.	Question	Yes	No
1.	Are the ultimate objectives toward which the subcontract is directed adequately described, and are they appropriate to the prime contractor's effort?		
2.	Are the specific objectives of the subcontract reasonably bounded?		
3.	Is a specific method of approach and schedule established for accomplishing the statement of work?		
4.	Are drawings and specifications clear and concise?		
5.	Is a definite end item required or is contractor's best effort specified?		
6.	Has the necessity for the subcontract work been satisfactorily demonstrated?		
7.	Is there a reasonable expectation that the subcontract will satisfy all technical requirements?		
8.	Does the procurement require technical liaison between contractor and subcontractor or vendor?		
9.	Is provision made for technical control by contractor over subcontractor?		
10.	Does the subcontractor require access to classified information? What is the highest classification anticipated? 1. Negotiations - 2. Documents - 3. Work - 4. Material -		
11.	Are radiation or health hazards involved?		
12.	Were all bidders furnished same specifications?		
13.	Is the subcontractor's bid based on meeting all specifications, including time limit?		
14.	Is the proposed subcontractor competent and reputable?		

NA
See Comments

NARA II
RG 326
Accession 4KR
326 83 -006
Records cover the
establishment
operation of the
Lockland from the
1950-1961.
NA 1070 (9-87)
Box 72

NARA 000486

Item No.

Remarks (cont)

On the basis of the above, the Technical Branch recommends:

Approval

Disapproval

Additional information required

Alternate Source

Explanation: *We approved the cover since it is consistent with the
type of material submitted. Unfortunately, we could not
discuss the work with the author as they were
at present considerations. We should be very cautious
in placing additional OEF contracts for dis. work
in the future.*

L. R. Standifer, Jr.
L. R. Standifer, Jr., Chief
Technical Branch

Subcontract Check List - Administrative Branch

NARA II
RG 326
Accession 4KR
326 93-006
Records covering the
establishment
operation of the
Lockland from Ohio
1950-1961.
NA 14070 (9-87)
Box 72

NARA 000487

	Prev.	Allocation
Previous Totals	\$1370	\$13,000
This Amendment		2,000
New Total	\$1370	\$15,000

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT No. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and ~~General Atomic Company, All Department, and Sponsors~~ (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

Completion of work described in Sponsored Task 0-24.

2. Except as follows, all of the provisions of said Contract applicable with respect to the work added hereby:

None

(Note: Insert 'None' if applicable)

3. The fixed fee for the work added hereby is \$ None.

4. Performance of the work shall end on December 30, 1955.

5. \$ 7,000 has been ~~(insert 'obligated'~~ if the Commission is the party, or 'allocated' if a Sponsor is involved) for the work hereby. (See 4b and 4c of Article IV.)

NARA II
RG 326
Accession 4KR
326 33-006
Records covering the
establishment
operation of the
Lockland Area Office
1950-1961.
NA 14070 (9-57)
Box 72

6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.
By: W. E. Kingston
W. E. Kingston, General Manager
Title: Atomic Energy Division

APPROVED:
UNITED STATES ATOMIC ENERGY COMMISSION
New York Operations Office

By: J. G. Clarke
Title: J. G. Clarke
Contracting Officer

GENERAL ELECTRIC COMPANY

By: D. R. Shultz
D. R. Shultz, Manager
Title: Aircraft Nuclear Propulsion Dept.
Atomic Products Division

Approved:
LOCKLAND AREA OFFICE
UNITED STATES ATOMIC ENERGY COMMISSION

By: E. M. Valtin
E. M. Valtin
Area Manager

MAY 23 1956

NARA II
RG 326
Accession 4KR
326 83 -006
Records covering the
establishment
operation of the
Lockland Area Office
1950-1961.
NA 14070
62-83
Box 72

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Charles E. Jones, Assistant Chief, Security Branch, LAROO DATE: March 2, 1959

FROM : James R. Marin, Chief, Physical Security Branch Security Division, New York

SUBJECT: SYLVANIA-CORNING NUCLEAR CORPORATION, BAYSIDE, NEW YORK

SYMBOL: SP:JRM

CLASSIFIED SECURITY	
<input type="checkbox"/>	W. D. M.
<input checked="" type="checkbox"/>	C. E. J.
<input checked="" type="checkbox"/>	L. W.
<input type="checkbox"/>	M. L.
<input type="checkbox"/>	E. O.
<input type="checkbox"/>	

Reference is made to your memorandum dated Feb. 20, 1959, same subject covering Purchase Order ANPG-210025 between your prime contractor GE-ANPD, Evendale, Ohio and Sylvania Corning Nuclear Corp.

This will advise that Sylvania Corning Nuclear Corp., Bayside, Long Island, N. Y. is an approved "B" facility of NYOO eligible to receive and retain documents and material classified through "Secret-RD" and to perform work bearing the same classification. Any classified documents to be forwarded to subject location should be addressed as follows:

Sylvania-Corning Nuclear Corp.
 General Engineering Laboratory
 P. O. Box 59
 Bayside, L. I., N. Y.
 Attn: Reports Custodian

With respect to the above interest in which Sylvania Corning has been requested to fabricate special fuel elements, Mr. Timothy J. O'Connor, Sylvania Corning Security Officer, was contacted on Feb 27 and March 2 concerning this work. O'Connor advised that the work will be performed at both Sylvania Corning Hicksville, Long Island, N. Y. and Bayside, Long Island, N. Y. locations. The work to be performed at the Bayside location will be confined to Rooms 135, 221, 225, 238, 241 and 241-A. These rooms are included in the secured area of Bayside and all necessary security safeguards are in effect which will permit performance of your work at this location.

The Hicksville location of Sylvania Corning is surveyed and serviced by SROO which office also covers several NYOO interests at that location. According to O'Connor your interest will be performed at Hicksville in the confines of the machine shop in Building #2 which is presently being utilized for classified work of interest to SROO.

(continued)

NARA II
 RG 326
 Accession 4KR
 326 93 -006
 Records covering the
 establishment
 operation of the
 Lockwood from the
 1950-1961
 NA 14070 (9-87)
 Box 47

Charles E. Jones

-2-

March 2, 1959

Mr. O'Connor further advised that all individuals in the machine shop at Hicksville who are to be engaged in work of interest to your office are presently "O" cleared through SR00 and that he is taking necessary steps to request extension of clearances through GE for all Sylvania-Gorning employees to be engaged in this interest. It is suggested that you contact SR00 for copies of security survey reports and to request that office to cover your interest in Sylvania-Gorning, Hicksville. An SSR covering the Bayside location of subject is being prepared by this office and you will be furnished with an information copy.

Inasmuch as facility will be utilizing the Bayside, Long Island, N. Y. location, correspondence forwarded to this office will be retained. Any correspondence which you feel will assist SR00 should be forwarded directly to them.

Contact with Mr. O'Connor this date revealed that it is Sylvania-Gorning's opinion that there will be no classified material connected with this project. He advised that if they are incorrect in this belief they should be advised accordingly at which time determination can be made as to where the material is to be shipped initially and a mailing address for material will be established.

If this office can be of any further assistance in this matter, please notify us.

NARA II

RG 326

Accession 4KR

326 93-006

Records covering the
establishment

of the

Lockland Association

NA 14070 (9-87)

Box 77

NARA 001768

CONFIDENTIAL

J. H. Jones, Director, Security Division
Savannah River Operations Office

March 6, 1959

Charles E. Jones, Chief, Physical Security
Section, Security Branch, LABO

"When separated from enclosures, handle this
document as

**SILVANIA-CORNING NUCLEAR CORPORATION,
BATISIDE, NEW YORK AND HICKSVILLE, NEW YORK**

Unclassified.....

Attention: E. P. Kurtas

Our Prime Contractor, GE-ATRD, Evandale, Ohio, has recently negotiated a purchase order, ATRD-210025, with the subject company to fabricate test fuel elements. Since the work requires the handling of documents classified up to and including "Secret - Restricted Data" and the establishment of a classified work area, RTD0 was requested to advise this interest and provide information upon which facility approval could be extended.

We have been advised by RTD0 that through contact with Mr. Timothy J. O'Connor, Sylvania-Corning Security Officer, the work will be performed at both the Sylvania-Corning's Bayside and Hicksville locations. RTD0 further advised that the Bayside facility is an approved "Q" facility of RTD0 and is satisfactory for the receipt and retention of documents and materials classified through "Secret - Restricted Data" and to perform work of the same classification. However, the Hicksville facility is unvetted and serviced by your office.

According to Mr. O'Connor, LABO's interest at Hicksville would be performed in the confines of the machine shop in building #2 which is presently utilized for work of interest to your office. Personnel in the machine shop who are to be engaged in the work of interest in this office are reportedly "Q" cleared through ESO0 and are now being processed for extension by LABO. Accordingly, it is requested that we be furnished with the necessary information upon which we can grant an extension of facility clearance of the Hicksville facility and that ESO0 provide continuing service of our interest when conducting surveys. Information should include both a classified mailing and shipping address.

To provide assistance in evaluating the requested security safeguards we are enclosing a copy of the classification guidance prepared by GE-ATRD for application to the referenced purchase order. Your comments and recommendations would be appreciated.

Enclosure:
 67 CSD ltr dtd 2-18-59 to C. I. Malman in W. G. Booth

OFFICE ▶	SAC, OFFICE <i>Malman</i>	CH. PHYS. SEC.	
SURNAME ▶	<i>JONES</i>		
DATE ▶	3-6-59		
FORM ABC-516 (REV. 4-53)		U. S. GOVERNMENT PRINTING OFFICE 16-59761-4	
Document transmitted herewith		CONFIDENTIAL	
		CONFIDENTIAL	

NARA II
 RG 326
 Accession 4KR
 326-93-CC6
 Records Concerning the
 establishment of
 operations of the
 Lockland Army Air
 MA 14070 (9-87)
 Box 77

C

SYLVANIA ELECTRIC PRODUCTS INC.

ATOMIC ENERGY DIVISION
P. O. BOX 59
BAYSIDE, NEW YORK

"Document transmitted herewith
contains RESTRICTED DATA."

June 11, 1954

U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Attention: A. J. Vanderveydon

Subject: **SUBMISSION OF REVISED URANIUM AND THORIUM PROJECT PROPOSALS**
SYLVANIA CONTRACT AT(30-1)GEN-366

Gentlemen:

At the suggestion of Mr. W. H. Donnelly of AEG, NYOO, there is submitted herein in revised form a formal proposal (DOF 4958) complemented with a "119" Form (DOF 4963) for a uranium development project and a "119" Form (DOF 4962) for a thorium development project. These projects will be conducted at the Sylvania-Bayside Laboratory during F.Y. 1955 under Contract AT(30-1)GEN-366.

The aforementioned proposals supersede those issued previously by Sylvania as DOF numbers 4806, 4855, 4856, and 4925.

Very truly yours,

SYLVANIA ELECTRIC PRODUCTS INC.

E. S. Morris
Manager of Control Department

ESN:LS:nbv
cc: W. H. Donnelly, NYOO, AEG
F. Dowling, AEG, Oak Ridge

This copy for

When separated from enclosures,
handle this document as UNCLASSIFIED

When separated from enclosures, handle this document as unclassified
(insert proper classification)



RESTRICTED DATA

THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1946. ITS TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED.

010-43496

NASA II
L-5 288
Accession HNN 326
REC'D and indexed
Box 5

COPY

File

Documents forwarded to Morris, born (new) by name donor 7/19/54. JS

7385
MR. DOWNING
② MRS. MAJONE (File)

W. H. Donnelley, Contract Coordination Division
New York Operations

July 6, 1954

John E. Moore, Director, Contract Division, Oak Ridge Operations

CONTRACT NO. AT-30-1-GEN-366 WITH SYLVANIA ELECTRIC PRODUCTS, INC.

SYMBOL: ADJRM

Attached are four copies of an authorization for performance of certain work under Contract No. AT-30-1-GEN-366 with Sylvania Electric Products, Inc., which have been assigned in by Oak Ridge Operations. In the language we have added in paragraph 2 regarding technical supervision of this work.

While we have not as yet received a copy of the above-mentioned contract, which we understand you are sending Mr. Carberry, we do understand from your teletype of July 2 that New York Council agree that the form of the attached work order is consistent with the pertinent provisions of the contract.

Will you kindly return for our use one signed copy and one confirmed copy of the work order.

John E. Moore

Enclosures:
Authorization under subj. cont. (4 cys.)

CC: Mr. E. B. Morris, Sylvania Electric Products Inc.
Atomic Energy Division, P. O. Box 59, Moyale, N. Y.

✓ Mr. T. F. Carberry, GPO Tech Materials Div.

Moore:lm

SUR MAIL

NARA II
CG 236
Accession 4NN 326-87-007
AEC Prod Materials Div. Cont. #49
Box 5
1964

NARA 000089

Merton H. Donnelly, Contract Coordination Division, July 7, 1954
New York Operations Office

T. P. Carberry, Administrative Officer, Feed Materials Division,
Oak Ridge Operations Office

Sylvania Electric Products, AT(30-1)-222-200

STANDARD LETTER

By separate agreement they are being furnished to you the Appendix C
subcontract to the original contract covering work under Oak
Ridge instructions.

Please advise in writing in duplicate each account for this work,
approved by the contractor. Further, we would
appreciate your providing us with details of such costs
in a monthly statement of account for the month ending July 31,
1954, including the following:

T. P. Carberry, Director
Feed Materials Division
Oak Ridge Operations Office

T. P. Carberry

CC: M. A. Emerick
L. D. Kelley
R. B. Bode
H. H. Koenig

Carberry/gm

OFFICE	Feed Mat. Div.				
NAME	<i>gm</i>				
DATE	<i>7/7/54</i>				

FORM AEC-318

U. S. GOVERNMENT PRINTING OFFICE 16-52761-2

NACR II
NS 226
Accession 44NN 526-4 1957
ALC Serials Section 1957
Box 5

~~SECRET~~

J. P. Morgan, Area Manager, St. Louis

July 19, 1954

S. R. Sapirle, Manager, Oak Ridge

SYLVANIA ELECTRIC PRODUCTS, INC., CONTRACT AT(30-1)-ORR-366,
REDUCTION OF URANIUM AND THORIUM

SYMBOL: C7170

Re: This Oak Ridge visit of July 13, 1954, Dr. Charles D. Harrington
visited the area and requested that Hollinger be assigned as liaison with
Sylvania and have technical direction of testing and construction
work in the area of the Sylvania apparatus under Contract AT(30-1)-
ORR-366 by separate letter to Dr. Harrington. I am continuing our
response.

In order that you and Dr. Harrington may have background information
on the area materials development work, I am forwarding herewith one
copy each of Sylvania Proposal ORF-1958 and two related forms NYO-119
(ORF-1958 and ORF-1958).

Please transmit the enclosed material to Dr. Harrington as soon as
possible. I am informed that he plans to visit the Sylvania - Bayville
facility in the near future.

S. R. Sapirle

Enclosures:

- 1. NYO-119 (ORF-1958), GY 3A
- 2. NYO-119 (ORF-1958), GY 3A
- 3. Proposal ORF-1958, GY 3A

CC: H. H. Woodruff
E. Dowling
J. P. Morgan
W. H. Donnelly, New York

Carberry/gms

When Separated From
Inclosures Handle This Document
As Unclassified
Insert Proper Classification

Document(s) Transmitted Herein
Contain (S) RESTRICTED DATA

~~SECRET~~

Feed. Mat. Div.	Feed. Mat. Div.	Asst. Dir. Operations	Manager		
Carberry	Dowling	Woodruff	Sapirle		
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	ORO	44198

NAPA II
EG 306
Accession 4NN 326-87-007
REC 5: no initials Div Case 1547
Box 5

*John
7/20/54*

In Reply
Refer to: CP:TRQ

Oak Ridge, Tennessee
July 20, 1954

Dr. W. H. Kingston
Sylvania Electric Products, Inc.
P. O. Box 57
Bayside, New York

Dear Dr. Kingston:

As provided in Appendix G to Contract AF(33-1)-G28-166, I have requested Hallinckrodt Chemical Works to maintain liaison with Sylvania and have assigned a division of development work concerned with production of uranium and thorium. This work is detailed in your proposal W-1470 and Form W-1470-1D (see attached sheets).

My request that Hallinckrodt provide such liaison and technical direction is contained in a letter being mailed today to Dr. Charles D. Harrington, a copy of which is enclosed.

I believe the New York Operations Office has asked that you accumulate and segregate costs for this special materials work from other work under the contract and that you make monthly reports of such costs to the Oak Ridge Operations Office. In fulfilling this request, and in addition to sending copies of your work and technical reports to the Oak Ridge Operations Office, please send copies of such reports to Hallinckrodt.

Dr. Harrington plans to visit Bayside early in August, the date to be confirmed later. Every courtesy extended to Dr. Harrington will be appreciated.

Very truly yours,

S. R. Sapiro
Manager
Oak Ridge Operations

Enclosure
Ltr, Sapiro to Harrington, 7/20/54

- CC: Dr. Charles D. Harrington, Hallinckrodt
- W. H. Woodruff
- John R. Moore
- F. E. Dowling
- A. J. Vander Heyden, Washington
- W. H. Dannelly, New York
- J. P. Morgan, St. Louis

Carberry/gbm

11005

NASA II
 CG 326
 Accession UNN 326-07-007
 REC. FILED...
 Box 5

J. P. Morgan, Area Manager, St. Louis

July 23, 1954

S. R. Sapirie, Manager, Oak Ridge

SYLVANIA ELECTRIC PRODUCTS, INC., CONTRACT AT(30-1)-OEN-366,
REDUCTION OF URANIUM AND THORIUM

SYMBOL: OF:TRC

By memorandum of July 19, 1954, I indicated that by separate letter to Dr. Charles D. Harrington I would confirm a request made verbally that Mallinckrodt maintain liaison with Sylvania and technically direct uranium and thorium reduction work which Sylvania is performing under subject contract. Frank Dowling has indicated that he has discussed this assignment with you and that it has your concurrence.

Our request is made formally in the enclosed letter which is forwarded for your information and transmittal to Dr. Harrington. My writing directly to Dr. Harrington is necessary under the contractual arrangement outlined in the first paragraph of the enclosed letter.

JOYCE HERRING
for S. R. Sapirie

Enclosure:
Ltr. Sapirie to Harrington,
7/20/54 (50 & 2 cc's)

CC: N. H. Woodruff w/cc encl.
Carberry/ghm

OFFICE ▶	Feed Mat. Div.	Feed Mat. Div.	Ass't Mgr Opr	Ass't Mgr Adm	Manager
SURNAME ▶	Carberry	Doyling	Woodruff	Vanden Burck	Sapirie
DATE ▶	JR	JRC	ww	AV	JR

Form AEC-318

U. S. GOVERNMENT PRINTING OFFICE 16-52701-2

INDEX
CLASS
ACCESSION ANN 326-17-005
AEC
EX-6

NARA 000920

STP (1) Mr. Downing
STP (2) Mrs. Dodge

Geneva - 1cc of this
already filed in
Sylvania - 366 etc

GD:WED

July 26, 1954

Mr. W. E. Kingston
Atomic Energy Division
Sylvania Electric Products Inc.
Bayside, New York

Subject: AT(30-1)-GEN-366

Dear Mr. Kingston:

Oak Ridge has informed us that Dr. G. D. Harrington
of the Mallinckrodt Chemical Works has been designated
to maintain liaison with Sylvania to have technical
direction of uranium and thorium reduction work being
done by you for Oak Ridge.

Very truly yours,

W. H. Donnelly
Contracts Division

CC: F. R. Dowling, OROO ✓

NARA II
EG 326
Accession 4NN 326-87-007
AEC Food Materials Div. Corr. 1947
Box 6 1964

NARA 000091

DRAFT

1-6-54 (Carberry;pdp)

M. Goldberg, Director, Contracts Division, New York

F. R. Dowling, Director, Feed Materials Division, Oak Ridge

SYLVANIA ELECTRIC PRODUCTS, INC., AT(30-1)-GEN 366 - SPONSORED
TASK 13

OF:TEC

We refer to memoranda on the subject to T. P. Carberry from
V. J. Del Vecchia and W. H. Donnelly, dated December 22, 1954,
and December 29, 1954, respectively, and a telephone conversation
between Messrs. Donnelly and Carberry on January 6, 1955.

This will confirm Mr. Carberry's telephonic advice to Mr. Donnelly
that we have approved in our mid-year review the monthly cost
distribution ^{shown in Mr. Del Vecchia's memorandum, as projected for}
~~projected for the thorium and uranium projects for~~
~~the period December 1954 - June 1955, as shown in his plan~~
~~the period December 1954 through June 1955.~~ We do not intend to
sponsor a level of effort ^{costing} in excess of these amounts.

With reference to Mr. Donnelly's memorandum of ~~December 29, 1954,~~
we still do not understand the reason for the high costs incurred
in Sponsored Task C-13 (Thorium Project), ^{in the period September - November 1954,}
received thus far from Sylvania, have not included an account of
ORO-sponsored thorium work which would justify or explain this high
rate of cost. Further, with reference to information received by
Mr. Donnelly from Mr. W. E. Kingston of Sylvania, we do not under-
stand how the high costs ^{for this period} are attributable to "interest by Savannah
River," and would appreciate your obtaining from Sylvania clarifi-
cation on this point. We would specifically like to know background
as to approval for du Pont participation in the ORO-sponsored work,

NARA II
EG-226
Accessory 4NN 326-57-007
ALC Fund Materials Div. Corr. 1947
Box 5 1964

NARA 000075

M Goldberg

- 2 -

DRAFT 1-6-55

if there was such participation, and whether Sylvania's "obtaining funds from du Pont" means that such funds will be credited to Sponsored Task C-13 to cover work performed because of "interest by Savannah River" or whether such funds will be used to effect a du Pont-sponsored task, presumably for work along lines we have sponsored. ~~Whatever information you may obtain to clarify matters will be appreciated. Until the above requested information is received~~ *Pending clarification with the above persons,* we will defer decision on future work under Sponsored Task C-13, except for approval of the cost distribution presented in Mr. Del Vecchia's memorandum and the level of effort this distribution provides.

We sincerely appreciate your cooperation in this matter.

F. R. Dowling

CC: *N. H. Woodruff
V. J. De Vecchia, NYO
E. Dodge*

Carberry:pdp

NARA II
E-5 226
Accession 4NN 326-87-007
ALC Form M-100-15 D-11 Form 1947
Box 5 1764

NARA 000076

Office Memorandum • UNITED STATES GOVERNMENT

TO : S. R. Sapirie, Manager, Oak Ridge Operations DATE: MARCH 23 1958

FROM : M. Eisenbud, Manager, New York Operations Office *CAS. M.E.*

SUBJECT: SYLVANIA ELECTRIC PRODUCTS, INC. - AT-30-1-GEN-366
OAK RIDGE SPONSORED WORK

SYMBOL: C:WHD

Attention: T. Carberry, Feed Materials Division

As you know, we first proposed that your work be handled via an "Appendix C" agreement. One was actually submitted to you by Sylvania, number C-13, and signed. Later it turned out our financial system could not accommodate itself to this arrangement. Oak Ridge thereupon transferred funds to NYOO which we have added to this contract. However, Sylvania still holds signed agreement C-13. Their accountant has questioned the existence of two documents (our contract and your Appendix C), both covering the same work. I suggest you withdraw the Appendix C agreement from Sylvania to clarify this situation.

By [unclear] [unclear] [unclear] [unclear] [unclear]

Sylvania Electric Products, Inc. -2-

Even though the time is short for the preparation of a close-out report, we would prefer that no attempt at conciseness be made at the expense of (a) detailed discussion, both qualitative and quantitative, of all fields of the work, (b) inclusion of negative investigations, (c) presentation of graphs and tabular data of clear significance and value for future investigations, (d) equipment construction details proven critical to good process operation and other matters of clear interest to technical groups who may desire to re-initiate work on this process under their own financing and for their own benefit. This desire is consistent with the Commission's effort to make known to industry all possible information developed at the Government's expense and therefore equally available for use by all properly qualified concerns.

We have noted your enthusiasm for this process and would be pleased to hear that you have decided to continue this work on your own. Under these conditions, the additional information developed through your own private investigations would be of a proprietary nature and would not be a matter of common knowledge or access. It may even be that the existing experimental equipment can be made available to you at your request through appropriate settlements or arrangements.

It is our desire to stimulate and encourage such private action and involvement in the atomic energy field, not only on the part of your company but of all technically qualified and interested parties.

Very truly yours,

F. R. Dowling
Director
Feed Materials Division

CC: W. N. Munster, Washington
N. F. Sievering, Washington
Merril Eisenbud, NYOO
F. H. Belcher, St. Louis (2)
N. H. Woodruff
N. A. Shearon

1956 APR 13 10 10 AM '56

OFFICE	Feed Materials Division	LeGassie:glm	Cattery	7/11/56	Concurrent	18-56	Manay
SURNAME							
DATE	4/13/56	7/11/56					4-18-56

Form AEC-216 (Rev. 9-63)

U. S. GOVERNMENT PRINTING OFFICE 16-52761-2

MAN I
1-1-56
Accession UNN 323-107-1002
ALC 15-4
Box 28

NARA 000249

SYLVANIA
ELECTRIC PRODUCTS INC.



ATOMIC ENERGY DIVISION
P. O. BOX 59
BAYSIDE, NEW YORK

May 24, 1956

Mr. F. R. Dowling
Director, Feed Material Division
Oak Ridge Operations Office
Oak Ridge, Tennessee

Subject: CONTRACT AT-30-1-GEN-366

Dear Mr. Dowling:

We have held off our reply to your letter of April 20 pending Mr. R. LeGassie's visit here May 18.

All reduction work has been completed and only the leaching experiments remain. This work will be completed sometime in June. However, we are dependent on other laboratories for chemical analyses of the sponge metal and accordingly we suggest August 31 as an appropriate expiration date.

As of April 30, we had \$25,390 of operating funds remaining of which \$2,233 was an open commitment. This is slightly more than enough to finish the work. Your notation as to cumulative costs through February are not correct as we had only \$47,881 unspent as of that date.

Your letter of April 20 has been given to our engineering personnel and we are confident that the final report will be a complete description of our progress. We have appreciated working with you on this project and trust we will have an opportunity to serve you further.

Very truly yours

SYLVANIA ELECTRIC PRODUCTS INC.

E. S. Norris

E. S. Norris, Controller
Atomic Energy Division

\$ 25,390

ESN:ral

Handwritten signature or initials

INCANDESCENT LAMPS . RADIO TUBES . FLUORESCENT LAMPS AND FIXTURES . SIGN TUBING . ELECTRONIC DEVICES
TELEVISION PICTURE TUBES . PHOTOFLASH LAMPS . RADIO AND TELEVISION SETS

NARA II
EG 326
Accession 4NN 326-87-00
AEC Feed Materials Div. Corr. 194
Box 76

NARA 000239

JUNE 6 1956

L. D. Mackay, Director of Finance, Oak Ridge

V. J. ... Director of Finance and
Finance Division

GENERAL INVESTIGATING DIVISION, CONTRACT AT (40-1)-56

... for the calendar
... under contract "G"

... under contract task G-13 for
... an adjustment of \$1,251.23
... covering material and other charges

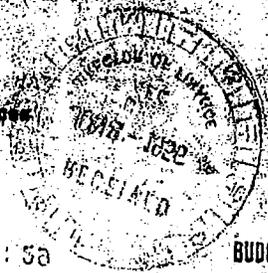
A detailed listing of invoices included in the above totals is
presented on Schedule B. Original copies of invoices
have previously been forwarded to your office for payment.

Overhead rates shown on the attachments to the invoices represent
provisional rates and will be adjusted to actual when the new rates
are negotiated with this office. An adjustment in the billing of
overhead will be made on subsequent billings.

The accuracy of the work has been checked by the auditor.

Audit comments are retained in the files of the Audit Branch, New
York Operations Office.

Enclosure
Schedule B, List of Invoices



RECEIVED JUN 14 8:58

BUDGET, ACCTG. & FINANCE

RECEIVED DIVISION
NOV 27 1956

[Signature]

NARA II
RG 326
Accession 4NN 326-87-007
NEC Fund Materials Div Corr. 1947
Box 38
1967

SCHEDULE F1

SILVANIA ELECTRIC PRODUCTS, INC. AT (30-1)-366
PERIOD: JAN 1955 - FEBRUARY 1955
PERIOD: JAN 1955 - FEBRUARY 1955

<u>Inv. No.</u>	<u>Period</u>	<u>Costs</u>	<u>Fee</u>	<u>Equipment</u>	<u>Total Billing</u>
24-388	1/1/55 - 2/21/55	11,958.85	87.21	688.44	12,734.50
438	1/2/55 - 2/20/55	2,087.07	193.27	725.61	2,905.95
438	2/1/55 - 2/20/55	1,018.18	112.21	1,270.46	2,400.85
		14,064.10	1,192.75	1,684.51	16,941.36
101	6/27/54 - 6/30/54	11,311.97	101.23	1,376.24	12,789.44
461	1/2/55 - 2/20/55	1,251.21			1,251.23
438	April 1955 Adjustment	(20,000.00)			(20,000.00)
		<u>\$13,315.88</u>	<u>\$1,293.98</u>	<u>\$16,101.69</u>	<u>\$50,651.64</u>

(1) Miscellaneous overhead adjustments through Feb 28, 1955.

(2) Material and other direct charges are credited with \$18,501.39 and U & A credit of 8.15, totals \$18,509.54.



RECEIVED
 DIVISION

BUDGET, ACCTS. & FINANCE
[Signature]

NARA II
 E-326
 Accession 4NN 326-87-005
 AEC Field Materials Div. Corr. 1947
 Box 26

In Reply
Refer To: OF:RNL

Oak Ridge, Tennessee
June 19, 1956

Sylvania Electric Products, Inc.
P. O. Box 59
Bayside, New York

Subject: PROGRESS DEVELOPMENT WORK FOR OAK RIDGE, PROJECT 1837-a,
CONTRACT NO. AT-30-1-GEN-366

Gentlemen:

Please refer to our previous letter on this subject of April 20, 1956. We are in receipt of your reply from Mr. E. S. Harris, Controller, Atomic Energy Division of Sylvania, dated May 24, 1956. This letter is intended to confirm discussions between representatives of your organization and Mr. LeGassie on the occasion of his visit to Sylvania on May 18, 1956.

We are agreeable to the selection of August 31 as an appropriate expiration date for the subject project and will budget accordingly so that funds will be available to cover work necessary in FY 1957 to complete the termination report.

As stated by Mr. LeGassie in his discussions with you, we feel that the cost estimates prepared by Sylvania at our request and submitted to us as DDP-5732, "Project Proposal - Carbon Reduction of Uranium Oxide," are of sufficient interest and importance that they should be incorporated to the maximum extent possible into the present summary and termination report. It is not our intention here to request a new examination of the cost data but merely to have you present, in a form available for publication, the cost estimates made of the carbothermic process wherever this information still appears to be valid.

We would appreciate your planning for the return to our feed materials plants the uranium-bearing materials which have been held in inventory under this project. We understand that there are approximately 750 pounds of good "biscuit" material now available which is amenable to storage and appears to be the most satisfactory form in which to insure the availability of some sponge metal for future investigations. This material should be shipped for storage to the Mallinckrodt Chemical Works' Uranium Division. It should be so packaged that no further

~~PLANT, LABOR, PHOTOS & LAND~~

CONTRACTS

G. Rennick

NARA II
1-10-56
Accession 4NN 326-87-002
AEC Prod Materials Div. Corr. 1947-
1956

NARA 000240

1875

SYLVANIA ELECTRIC PRODUCTS INC.



Atomic Energy Division
BAYSIDE, NEW YORK

August 10, 1956

Mr. F. R. Dowling
Director, Feed Material Division
Oak Ridge Operations Office
Oak Ridge, Tennessee

Subject: CONTRACT AT-30-1-366

Dear Mr. Dowling:

With regard to our Process Development work for Oak Ridge, and in particular to your letter of June 19, 1956, we request an extension of the time limit from August 31, 1956 to September 30, 1956. Our technical people now feel that this time will be necessary for the completion of our report. This delay is mainly due to the explosion which occurred here at the beginning of July.

Very truly yours

SYLVANIA ELECTRIC PRODUCTS INC.

A. M. Master, Jr.

A. M. Master, Jr.
Contract Administration

AMM:ral
cc: Mr. I. Zazik, AEC-NYOO

CONFIDENTIAL
Sylvania

INCANDESCENT LAMPS • RADIO TUBES • FLUORESCENT LAMPS AND FIXTURES • SIGN TUBING • ELECTRONIC DEVICES
TELEVISION PICTURE TUBES • PHOTOFLASH LAMPS • RADIO AND TELEVISION SETS

NARA II
RG 226
Accession 4NN 326-57-4
AEC Feed Materials Div. Cont. 134
Box 79

NARA 000233

124

RECEIVED PROJECT August 17, 1956

F. H. DONLHO, DIRECTOR
FEED MATERIALS DIVISION
AEC RESEARCH ESTABLISHMENT
GAITHERSBURG, MARYLAND

ORIGINAL SIGNED
BY: W. HUGH

STAVAKA, GEORGE H. (PHYSICIAN)
1700 10th Avenue
Baltimore, MD 21204

ATTENTION: Dr. M. MASTERS, JR.

THIS IS TO ADVISE THAT YOUR LETTER REQUEST OF AUGUST 10, 1956, FOR AN
EXTENSION OF THE DEADLINE FOR THE SUBMISSION OF REPORTS ON THE
CONTRACTS UNDER THE FEED MATERIALS DIVISION IS NOT GRANTED.

Very truly yours,
A. H. Masters, Jr.

In view of the Federal Government work for you which
is mentioned in your letter of August 17, 1956, as being
of the time limit from August 17, 1956 to September 1, 1956,
technical people may feel that this time will be necessary
for completion of our reports. This delay is mainly due to
which occurred here at the beginning of July.

Very truly yours,
A. H. Masters, Jr.
Director, Feed Materials Division

cc: Mr. H. Noorduff
cc: J. Zyzanski, NY 100

cc: Mr. I. Zarik, AEC-WYOO

Noorduff
4513

10100
Room 652 Feed Materials Division

SURNAME

DATE

1700

Ruch

8-17-56

Contract A.D. 1

CONTRACTS
Nylon/pada

Form AEC-318 (Rev. 9-43)

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TELEVISION PICTURE TUBES • PHOTOFLASH LAMPS • RADIO AND TELEVISION

NARA II
EG 326
Accession 4NN 326-87-00
AEC Feed Materials Div. Cont. NY
Box 34

NARA 000232

2434

SYLVANIA-CORNING NUCLEAR CORPORATION

Bayside, Long Island, New York

May 16, 1957

U.S. Atomic Energy Commission
Oak Ridge Operations Office
P.O. Box E
Oak Ridge, Tennessee

Attention: Mr. John V. Rush, Director
Feed Materials Division

Gentlemen:

This is in reply to your letter of May 7, 1957 regarding the completion of the final report on the Oak Ridge development work which we performed under Contract AT-30-1-GEN-366. The actual writing of the report has been completed and the report is now undergoing editing, editorial review, typing and printing. Since it is approximately a 300 page report, these processes, as well as the original writing, have taken considerably longer than we estimated.

Because the costs of editing, typing, etc. are applied to overhead rather than on a direct project basis, I believe there will be very little cost applied to the project in addition to the \$12,007 incurred as of March 31, 1957. Our technical people now promise that the report will be finished by June 30 and I hope this will be satisfactory to you.

Very truly yours,

SYLVANIA-CORNING NUCLEAR CORPORATION

Arthur M. Master, Jr.
Arthur M. Master, Jr.
Contract Administration

GWE:ral

cc: Mr. I. Zazik-AEC-NYOO

CONTRACTS
Improvis

NARA II
RG 326
Accession 4NN 326-87-007
AEC Feed Materials Div. Corr. 1947
Box 12

NARA 000302

M. Goldberg, Director, Contract Division, NYOO

July 25, 1957

R. G. Humphries, Acting Director, Contracts Division, OROO

STEWART & BOHANNAN NUCLEAR CORPORATION, AT-10-1-484-366

STRICTLY CONFIDENTIAL

It is noted that we have received the final technical drawings for the Oak Ridge Special Fuel Element for the AEC program under the "Special Fuel" arrangement to support the AEC.

The Oak Ridge portion of the contract should therefore be considered as closed.

Signed by R. G. Humphries

R. G. Humphries

cc: N. H. Woodruff
R. G. Humphries
N. A. Shearon
L. D. MacKay

OK

RECEIVED 326 W 10 11

CONTRACTS
By [Signature]

OFFICE	Feed Materials Division	Contract Div			
SURNAME	<i>Carperry</i>	<i>Shearon</i>			
DATE	7-25-57	7-25-57			

Form AEC-518 (Rev. 9-55)

U. S. GOVERNMENT PRINTING OFFICE 10-57761-3

NARA II
EG 326
Accession 4NN 326-57-007
AEC Feed Materials Div. Corr. 1977
Box 42 1964

150

Mr. Goldberg, Director, Contracts Division,
War Relocation Authority
Mr. [Name], Director, Contract Division,
War Relocation Authority

August 13, 1957

AT-30-1-424-366

SUBJECT: [Name]

In reference to your memorandum of July 19, 1957, on the subject,
it appears that ORO sponsored work was originally incorporated in an
Appendix "G" agreement. However, records available locally indicate
that the Appendix "G" agreement was superseded about April 1955, when
ORO sponsored work was incorporated in Amendment No. 18 to subject
contract and Amendment No. 3 to Appendix "D" of the contract.

Original signed by
P. G. Hurchules, ASST
Local signed by
John R. Moore

CONTRACTS

Systemic

Food Materials
Cartberryarb
8-12-57

Contract Div.
R. Hurchules
8-13-57

NARA II
EG 326
Accession 4NN 326-57-007
AEC Food Materials Div. Corr. 1947
Box 42 1964

STANDARD OVERHEAD RATES
1956 METALLURGY DIVISION COSTS

L. D. Mackey, Director of Finance, Oak Ridge

JAN 8 1958

V. J. Del Vecchio, Director, Budget and
Finance Division, New York

SILVER CLADDING NUCLEAR CORPORATION, ARMY OF OAK RIDGE
SPONSORED PORTION OF WORK INCLUDED IN CONTRACT AT (90-1)-366
PERIOD JULY 1, 1955 to JUNE 30, 1957. PROJECTS 1818, 1838, 1840 & 1889.

Reference is made to your memorandum of November 7, 1957,
concerning the above contract.

This office has negotiated the following fixed overhead rates
for the calendar year 1956 with the above contractor:

Metallurgy Laboratory	133.9% of Direct Labor
Division General & Administrative	8.2% of Total Costs
Home Office General & Administrative	2% of Total Costs

The provisional rates paid to the contractor during the calendar
year were:

Metallurgy Laboratory	120% of Direct Labor
Division General & Administrative	12% of Total Costs
Home Office General & Administrative	2.1% of Total Costs

The total adjustment of \$1,038.84 to 1956 overhead costs applicable
to your sponsored portion of the work under the contract is shown
on the attached schedule.

Enclosure:
Schedule

NARA II
RG 326
Accession 4NN 326-87-007
AEC Food Materials Div. Corr. 1947
Box 42 1961

MEMORANDUM FOR THE DIRECTOR, NATIONAL ARCHIVES

FROM: [Illegible]

SUBJECT: [Illegible]

[Illegible]

January 1, 1957 to March 31, 1957

1. [Illegible]
2. [Illegible]
3. [Illegible]
4. [Illegible]

April 1, 1957 to December 31, 1957

1. [Illegible]
2. [Illegible]
3. [Illegible]

The General Electric Division of the General Electric Products Company, Inc. (GE) transferred to the National Archives and Records Administration the records of the GE Division, April 1, 1957 to the date of the transfer. The records of the GE Division were transferred to the National Archives and Records Administration on December 31, 1957.

/s/ [Illegible]

NOV 1957

NARA II
RG 326
Accession # 44NN 326-71-207
AEC Fed Mail Stop 1000
Box 27

D

Accounting

Thompson - Wade

CONTRACT NO. AT-30-1-GEN-366.

Act. 2604 until actual running C-24

APPENDIX "C"

Responsive Doc 29

WORK UNDER PARAGRAPH 2 OF ARTICLE II

AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366
BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE
UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC
PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the United States Atomic Energy Commission represented by the Manager, SROO (the 'Commission'), adds the following work under paragraph 2 of Article II of the above-identified contract:

DESCRIPTION OF WORK

Experimental development of a process suitable for production of target elements, and a small-quantity demonstration of the operability and practicality of such process, all in accordance with Sylvania's proposal of January 7, 1955, Document No. DCF No. 5515, which is expressly made a part hereof by reference.

2. Except as follows, all of the provisions of said Contract are applicable with respect to the work added hereby:

In Amendment 15, Article VI, paragraph 1, line 2, immediately following "course of", the words "any of the work under" are deleted, and in place thereof is inserted the terminology "in connection with, or under the terms of".

Amendment 15, Article VI, paragraph 1, line 15, the word "fissionable" is deleted, and in place thereof is inserted the term "special nuclear".

Amendment 15, Article VI, paragraph 2, line 2, the word "Act" is pluralized to read "Acts", and immediately following "1946" there is inserted the term "and 1954."

3. The fixed fee for the work added hereby is \$1,560.00.

4. \$29,150 has been obligated for the work added hereby. (See 4b and 4c of Article IV.)

5. This Agreement is effective as of January 14, 1955.

UNITED STATES ATOMIC ENERGY COMMISSION

By John V. Vinciguerra
Acting Director, Administrative Division
Savannah River Operations Office

Contracting Officer

SYLVANIA ELECTRIC PRODUCTS, INCORPORATED

By W. E. Krugster
Title: General Manager, Atomic Energy Div.

SYLVANIA ELECTRIC PRODUCTS INC.

EXTRA COPY

CUSTOMER'S
ORDER NO.

AT (30-1) GEN 366
APPENDIX C - SPONSOR TASK C-24

INVOICE NO. SA #710

ATOMIC ENERGY DIVISION, BAYSIDE, N. Y.

SOLD
TO

U. S. ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE
P.O. BOX "A"
AUGUSTA, GA.

DATE
ENTERED
TERMS

INVOICE
DATE 4/27/56

TERRITORY
SHOP ORDER NO.

SHIPPING
DATE

PRIORITY

SHIPPED
FROM

N. R.

CUSTOMER NO.

F. O. B.

CODE

Remit To SYLVANIA ELECTRIC PRODUCTS Inc.
Cantiague Road, Hicksville, N. Y.

SHIPPED
TO

VIA

QUANTITY ORDERED	TYPE	UNIT PRICE	QUANTITY SHIPPED	EXTENSION
	CHARGE FOR FEE TO BRING UP TO CONTRACT AMOUNT.			113.23
	<p>"I Cert. that the above bill is correct and that no payment therefor has not been received"</p> <p>SYLVANIA ELECTRIC PRODUCTS, INC.</p> <p>B. CENOA SUPERVISOR OF ACCOUNTING</p> <p>DR 650-05-90 CT 699-01-90</p> <p style="text-align: right;">SA #710</p> <p style="text-align: center;">Title passes upon delivery by the Seller to the Carrier.</p>			

PENNSYLVANIA ELECTRIC PRODUCTS INC.
ATOMIC ENERGY DIVISION
BASSETT, NEW YORK

CONTRACT AT(50-1) 157 366
F FENDEX C
SPONSOR TASK C-24

U. S. ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE
P.O. BOX "A"
AUGUSTA, GA.

PROJECT 1866
SA #710
APRIL 27, 1956

CHARGE FOR FEE TO BRING UP TO CONTRACT AMOUNT.

	<u>THIS</u> <u>BILLING</u>	<u>BILLING</u> <u>TO DATE</u>
1) DIRECT LABOR	\$ -	\$ 5,319.29
2) OVERHEAD @ 120%	-	6,383.16
3) MATERIAL & OTHER D/C	-	2,668.19
4) RESEARCH LAB. T/C	-	<u>905.52</u>
5) TOTAL - ITEMS 1,2,3, & 4	-	15,276.16
6) G. & A. - 14.1% OF ITEM	-	1,238.99
7) HICKSVILLE T/C	-	2,549.11
8) G. & A.	-	<u>43.34</u>
9) TOTAL - ITEMS 5, 6, 7, & 8	-	19,112.30
10) FEE -6% OF ITEM 9	413.23	1,560.00
11) EQUIPMENT	-	<u>193.25</u>
TOTAL	\$ <u>413.23</u>	\$ <u>20,866.05</u>

SA #710

USDOE 016776

*Accounting
Signed by*

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE II

AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366
BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE
UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC
PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the United States Atomic Energy Commission represented by the Manager, SROO (the 'Commission'), adds the following work under paragraph 2 of Article II of the above-identified contract:

	OBLIGATION RECORDS		GENERAL LEDGER		DESCRIPTION OF WORK
	DATE	INITIAL	DATE	INITIAL	
POSTED CONTROL	APR 31	A.			A program to determine the feasibility of canning the Mark IV slug with a minimum aluminum wall thickness;
POSTED SUBSIDIARY		B.			A program for developing and evaluating the best method of canning "88" units using a double can;

all in accordance with Contractor's proposal of March 3, 1955, as outlined in letter from E. S. Norris to R. C. Blair, which is made a part hereof by reference.

2. Except as follows, all of the provisions of said Contract are applicable with respect to work added hereby:

In Amendment 15, Article VI, paragraph 1, line 2, immediately following "course of", the words "any of the work under" are deleted, and in place thereof is inserted the terminology "in connection with, or under the terms of".

Amendment 15, Article VI, paragraph 1, line 15, the word "fissionable" is deleted, and in place thereof is inserted the term "special nuclear".

Amendment 15, Article VI, paragraph 2, line 2, the word "Act" is pluralized to read "Acts", and immediately following "1946" there is inserted the term "and 1954".

3. The fixed fee for the work added by 1 A is \$340 and the fixed fee for work added by 1 B is \$140.

4. The amount of \$8,380 has been obligated for the work added hereby.
(See 4b and 4c of Article IV).
5. This Agreement is effective as of February 23, 1955.

UNITED STATES ATOMIC ENERGY COMMISSION

By John V. Vinciguerra
Acting Director, Administrative Division
Savannah River Operations Office
Contracting Officer

SYLVANIA ELECTRIC PRODUCTS, INCORPORATED

By W. E. Kingston
Walter E. Kingston
Title General Manager, Atomic Energy Division

Thompson - oblig
1 add - File + payment

	OBLIGATION RECORDS		GENERAL LEDGER	
	DATE	INITIAL	DATE	INITIAL
PRINCIPAL CONTRACT	JUN 21	C 1955		
POSTED SUBSIDIARY				

Modification No. 1
Supplemental Agreement to
CONTRACT NO. AT-30-1-GEN-366
Sponsored Task C-31

Responsive Doc 27

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE II

AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366
BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE
UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC
PRODUCTS, INC.

This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the United States Atomic Energy Commission represented by the Manager, SROO (the 'Commission'), adds the following work under paragraph 2 of Article II of the above-identified contract:

1. The following new subdivision "C" is added to paragraph 1 - DESCRIPTION OF WORK:

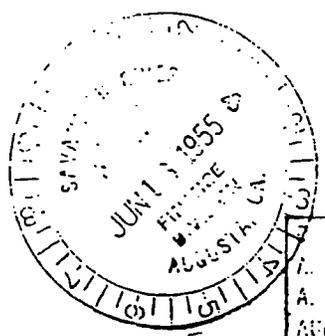
"C. Can about 605 Tubby units in accordance with letter from E. S. Norris to R. C. Blair dated April 27, 1955, which is made a part hereof by reference."

2. Add the following sentence to paragraph 3:

"The fixed fee for the work added by 1 C is \$1,140."

3. In paragraph 4 substitute the amount of "\$28,480" for "\$8,380".

4. This supplemental agreement is effective as of March 21, 1955.



DATE	INITIALS	REMARKS

UNITED STATES ATOMIC ENERGY COMMISSION

By John V. Vinciguerra
Director, Administrative Division
Savannah River Operations Office
Contracting Officer

SYLVANIA ELECTRIC PRODUCTS, INCORPORATED

By W. E. Kingston
W. E. Kingston
Title General Manager, Atomic Energy Divisi

Modification No. 2
 Supplemental Agreement to
 CONTRACT NO. AT-30-1-GEN-366
 Sponsored Task C-31

POSTED CONT.	APR 12 1956	GENERAL OFFICE
POSTED SUBSIDIA	APPENDIX "C"	

Responsive Doc 25

WORK UNDER PARAGRAPH 2 OF ARTICLE II

AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366
 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE
 UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC
 PRODUCTS, INC.

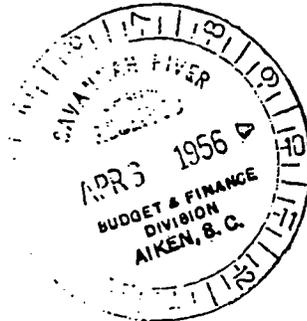
This Supplemental Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the United States Atomic Energy Commission represented by the Manager, SROO (the 'Commission'), modifies Sponsored Task C-31 under Contract AT-30-1-GEN-366, as heretofore modified, in the following particulars only:

1. The work provided for in paragraph 1 B of this Appendix "C" Agreement is deleted in its entirety.
2. The work provided for in paragraph 1 C in this Appendix "C" Agreement is changed to read as follows:
 "C. Can about 400 tubby units in accordance with letter from E. S. Norris to R. C. Blair dated April 27, 1955, which is made a part hereof by reference."
3. Paragraph 3 is amended to read as follows:
 "3. The fixed fee for work added by 1 A is \$340 and the fixed fee for work added by 1 C is \$700."
4. In paragraph 4 substitute the amount of "\$19,000" for "\$28,480".
5. This Supplemental Agreement is effective as of March 12, 1956.

~~574.41~~
574.41

(9,480.00)

DIR.		
A. DIR.		
A. U.		
AUDIT		
BUDGET	1	F
ACCIG.		



UNITED STATES ATOMIC ENERGY COMMISSION

By [Signature]
 Director, Administrative Division
 Savannah River Operations Office

SYLVANIA ELECTRIC PRODUCTS, INCORPORATED

By [Signature]
 Title General Manager
 Atomic Energy Division

*Wade for
Thompson has on*

SPONSORED TASK C-33

CONTRACT NO. AT-30-1-GEN-366

Responsive Doc 26

Dir.
A. DIR.
A. G.
AUDIT
BUDGET
ACTS
A-F

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE II

Work under paragraph 2 of Article II shall be performed by the Contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the United States Atomic Energy Commission represented by the Manager, SROO (the 'Commission'), adds the following work under paragraph 2 of Article II of the above-identified contract:

1. Description of Work

- A. Continuation of the Savannah River fuel and target element development in accordance with Sylvania's proposal DCF #5729, dated April 13, 1955, as modified by Sylvania's proposal DCF #5762, dated April 26, 1955, which are expressly made a part hereof by reference.
- B. Development of a process for reduction of "88" in accordance with Sylvania's proposal DCF #5727, dated April 12, 1955, which is expressly made a part hereof by reference.

2. Except as follows, all of the provisions of said Contract are applicable with respect to work added hereby: None

3. The fixed fee for the work added by 1 A is \$15,060.

The fixed fee for the work added by 1 B is \$6,510.

4. The amount of \$280,620* has been obligated for work added by 1 A.

The amount of \$127,430** has been obligated work work added by 1 B.

*	Operations	266,120	PFE - \$14,500	} Plus memo - Mr. Keating to Thompson dated 6/20/55 Agree 6/20/55
**	Operations	112,320	PFE - 12,500	
		<u>378,440</u>	<u>27,000</u>	

5. This Agreement is effective for the period July 1, 1955, through June 30, 1956.

UNITED STATES ATOMIC ENERGY COMMISSION

By *R. C. Blair*
R. C. Blair, Manager
Savannah River Operations Office

SILVANIA ELECTRIC PRODUCTS, INCORPORATED

By *W. E. Kingston*
W. E. Kingston
Title General Manager, Atomic Energy Division

SYLVANIA

~~SECRET~~

ELECTRIC PRODUCTS INC.



Atomic Energy Division
BAYSIDE, NEW YORK

"Document transmitted herewith
contains ~~RESTRICTED DATA~~"

March 16, 1956

DCF #6186 (Enclosed)

R. C. Blair, Manager
Savannah River Operations Office
U. S. Atomic Energy Commission
P. O. Box A
Aiken, South Carolina

Attention: Mr. J. Vinciguerra, Administrative Division

Subject: PARTIAL TERMINATION SPONSORED TASK C-33

Gentlemen:

We have terminated the work described in Paragraph 1A of this Sponsored Task in accordance with your instructions of February 6. The work actually accomplished is described in the enclosure. In our opinion, we have completed 50 percent of the work originally contracted for and accordingly propose that the fixed fee be reduced from \$15,060 to \$7,530. We estimate that the total funds required for this job, including close-out, will not exceed \$150,000 and accordingly suggest that the amount obligated for Paragraph 1A work be reduced to this figure.

Very truly yours,

SYLVANIA ELECTRIC PRODUCTS INC.

E. S. Norris

E. S. Norris, Controller
Atomic Energy Division

ESN/gb
Encl. DCF #6186, Copy 1A

"When separated from enclosures, handle
this document as UNCLASSIFIED".

~~SECRET~~

INCANDESCENT LAMPS • RADIO TUBES • FLUORESCENT LAMPS AND FIXTURES • SIGN TUBING • ELECTRONIC DEVICES
TELEVISION PICTURE TUBES • PHOTOFLASH LAMPS • RADIO AND TELEVISION SETS

USDOE 017356

~~SECRET~~

This document consists of 2 pages,
No. 1 of 4 copies, Series A

DCF #6186
March 16, 1956

UNCLASSIFIED

Change in Scope of Program on
Savannah River Fuel and Target Element Development

As a result of a change in the requirements of the Savannah River Laboratory the development work on fuel and target materials was discontinued on January 1, 1956, except for clearing the area used for this work and writing a final report. It is necessary, therefore, to change the scope of the work described in the proposal submitted on April 13, 1955 (DCF #5729), and revised in a letter dated April 26, 1955 (DCF #5762). The scope of the work performed on this program during the period July 1, 1955 to January 1, 1956 was as follows:

1. Methods of improving the quality of the aluminum clad flat plates were investigated. Powder loading methods were investigated in order to increase the thickness of the rolled uranium preform in order to meet the thickness specifications set up by the Savannah River Laboratory. Improved uranium preform cleaning and nickel plating methods were investigated as a means towards improving the bond strength between core and cladding.
2. Plates were fabricated according to the improved conditions which were developed. Destructive and non-destructive tests were conducted on these plates as a means of evaluating quality. One of these plates which survived the autoclave test was selected as representative of material which can be produced at this time and will be submitted to Savannah River Laboratory for evaluation.
3. Development work was performed on fabrication of tubular elements by powder rolling techniques. Tubes approximately 30-inches long, 2 1/2-inches in diameter, with .25-inch wall were produced. An investigation was started towards increasing the density of these rolled tubes in order to eliminate the necessity for densification during the cladding operation.

A final report is being prepared which will describe the progress made on this program since its beginning in 1953. It is estimated that the revised cost for the development work performed and for the final report which is being prepared will be \$150,000.

DEPARTMENT OF ENERGY SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date <u>4/1/63</u>	Determination (Circle Number)
Authority: <u>EADC</u> <input type="checkbox"/> <u>ADD</u>	<input type="checkbox"/> 1. Classification: Unchanged
Name: <u>J.B. Slack</u>	<input type="checkbox"/> 2. Classification changed to:
2nd Review Date <u>4-1-03</u>	<input checked="" type="checkbox"/> 3. Classification Canceled
Authority: <u>ADB</u>	<input type="checkbox"/> 4. Other: <u>CG-NMP-2</u> <u>9/00</u>
Name: <u>Henry W. Gordon</u>	

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. TRANSMITTAL OR THE DISCLOSURE OF ITS CONTENTS TO AN UNAUTHORIZED PERSON IS PROHIBITED.~~

UNCLASSIFIED

~~SECRET~~

USDOE 017355

	OBLIGATION RECORDS		GENERAL LEWIS	
	DATE	INITIAL	DATE	INITIAL
POSTED CONTROL	APR 19	1956		
POSTED SUBSIDIARY	APR 10	1956		

Modification No. 1
 Supplemental Agreement to
 CONTRACT NO. AT(30-1)-GEN-366
 Sponsored Task C-33

Responsive Doc 24

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE II

AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT(30-1)-GEN-366
 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE
 UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC
 PRODUCTS, INCORPORATED

This Supplement Agreement between Sylvania Electric Products, Incorporated (the 'Contractor'), and the United States Atomic Energy Commission represented by the Manager, SROO (the 'Commission'), modifies Sponsored Task C-33 under Contract AT(30-1)-GEN-366 in the following particulars only:

1. The work provided for in paragraph 1 A in this Appendix "C" Agreement is changed to read as follows:

"A. Continuation of the Savannah River fuel and target element development in accordance with Sylvania's proposal DCF #5729, dated April 13, 1955, as modified by Sylvania's proposal DCF #5762, dated April 26, 1955, and further modified by Sylvania's letter and enclosure DCF #6186, dated March 16, 1956, which are expressly made a part hereof by reference.

2. Paragraph 3 is amended to read as follows:

"3. The fixed fee for work added by 1 A is \$7,530.

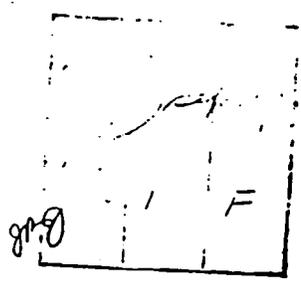
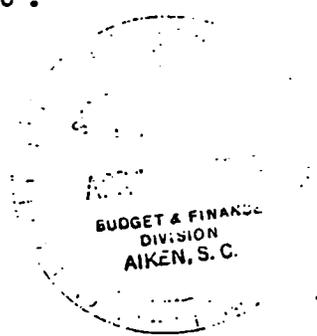
The fixed fee for work added by 1 B is \$6,510.

3. In paragraph 4 substitute the amount of "\$150,000" for "\$280,620".

266,120.00
 10,000.00
 1,879.04

 276,999.04

130,620.00 Total
 116,999.04 op
 13,620.96 PREP



4. This Supplement Agreement is effective as of March 16, 1956.

UNITED STATES ATOMIC ENERGY COMMISSION

BY *John V. Vinciguerra*
Director, Administrative Division
Savannah River Operations Office

SYLVANIA ELECTRIC PRODUCTS, INCORPORATED

By *W. E. Kingston*
W. E. Kingston
Title General Manager, Atomic Energy Division

Handwritten signature

MODIFICATION NO. 2
SPONSORED TASK C-33

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT No. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC.

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the U.S. Atomic Energy Commission, represented by the Mr., SRCO (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

Continuation of work under Sponsored Task C-33 as amended by Modification No. 1 to that Sponsored Task,

2. Except as follows, all of the provisions of said Contract applicable with respect to the work added hereby:

None

(Note: Insert 'None' if applicable)

3. The fixed fee for the work added hereby is \$ None.

4. Performance of the work shall end on approximately 11/30/56.

5. No additional funds ^{have} ~~been~~ been (insert 'obligated' if the Commission is the party, or 'allocated' if a Sponsor is involved) for the work hereby. (See 4b and 4c of Article IV.)

6. This Agreement will become effective upon its execution by both parties ~~on the date of execution of this Agreement~~ as of July 1, 1956.

SYLVANIA ELECTRIC PRODUCTS, INC.

By: W. E. Kingston
Title: General Manager

By: _____
Title: _____

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION

By: John V. Cingarella
Assistant to the Manager

Office Memorandum • UNITED STATES GOVERNMENT

TO : J. J. Wise, Director
Budget & Finance Division

DATE: February 6, 1957

FROM : *[Signature]*
T. L. Walker, Chief
Procurement & Contracts Branch

SUBJECT: MODIFICATION NO. 2 TO SPONSORED TASK C-33 - SYLVANIA ELECTRIC PRODUCTS, INC

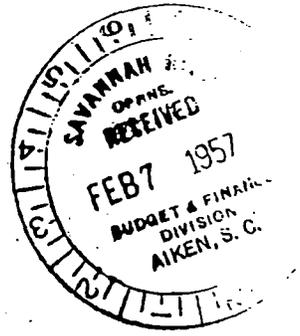
SYMBOL: AC:ar

There is attached for your information and file a copy of Modification No. 2 to Sponsored Task C-33 under Contract No. AT(30-1)-366 with Sylvania Electric Products, Inc. This modification extends the period of performance under the agreement to November 30, 1956.

Attachment:
As stated above

<i>[Handwritten initials]</i>	DIR.	2	
<i>[Handwritten initials]</i>	A. DIR.	3	
<i>[Handwritten initials]</i>	A. O.	1	
	AUDIT	6	
	BUDGET	5	
<i>[Handwritten initials]</i>	ACCTG.	4	F

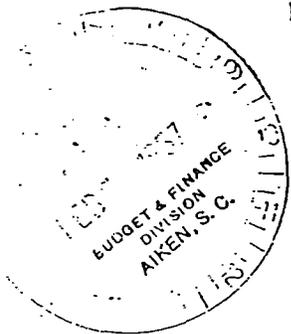
copied by



January 21, 1977

Responsive Doc 17

MODIFICATION NO. 3 TO SPONSORED TASK C-33



Handwritten signature

Administrative routing stamp with handwritten initials and dates.

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

Work under paragraph 2 of Article I shall be performed by the contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT No. AT-30-1-GEN-366 BETWEEN THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA ELECTRIC PRODUCTS, INC."

1. This Agreement between Sylvania Electric Products, Inc. (the 'Contractor'), and the U.S. Atomic Energy Commission, represented by the MGR, SR00 (Note: the 'Commission', or the 'Sponsor' if a firm), adds the following work under paragraph 2 of Article I of the above-identified contract:

DESCRIPTION OF WORK

Continuation of work under Sponsored Task C-33 as amended by Modification No. 2 to that Sponsored Task.

2. Except as follows, all of the provisions of said Contract applicable with respect to the work added hereby:

None

(Note: Insert 'None' if applicable)

- 3. The fixed fee for the work added hereby is \$ None.
- 4. Performance of the work shall end on approximately June 30, 1977.
- 5. No additional funds/ have been (insert 'obligated' if the Commission is the party, or 'allocated' if a Sponsor is involved) for the work hereby. (See 4b and 4c of Article IV.)

6. This Agreement will become effective upon its execution by both parties and, in the event this Agreement is by a Sponsor, upon its written approval by the Commission.

SYLVANIA ELECTRIC PRODUCTS, INC.

By: W. E. Kingston

Title: W. E. Kingston
General Manager
Atomic Energy Division

By: _____

Title: _____

Approved:

UNITED STATES ATOMIC ENERGY COMMISSION

By: James S. Hopkins

Director, Administrative Division

See Mod. No. 3 attached stamped Feb 7, 1957

P Y	OBLIGATION RECORDS		GENERAL LEDGER	
	DATE	AMOUNT	DATE	INITIAL
POSTED CONTROL	FEB 8	1957		
POSTED SUBSIDIARY			January 9, 1957	

Responsive Doc 16

Atomic Energy Division
Bayside, New York

Amount suggested
to be obligated \$9,800.00

Less: Amount previously obligated
to cover B.V. 57-1405 573.7

Amount obligated 2-8-57 9,226.3

Mr. J. Donohue,
Savannah River Operations Office
U. S. Atomic Energy Commission
P. O. Box A
Aiken, S. C.

Subject: STATUS OF SPONSORED TASK C-33

Dear Jack:

Subsequent to our telephone conversation concerning our November billing on this sponsored task, I reviewed the contract carefully with our technical people. The November billing covered costs for the writing of the final report, which is now being edited and proof-read. There will be a small additional charge for this work.

I have also learned that there will be an additional charge for the disposal of the thorium powder remaining from this project. This powder consists of two types -- some very fine powder which we plan to pump as a slurry into a dry well, and some coarser powder which will probably have to be burned to render it non-pyrophoric prior to its return to the Commission. Our estimate for the additional work required in the preparation of the final report and the disposal of the thorium is \$5,000.

I have prepared the attached schedule to show the difference between the billable costs and our realistic costs for this contract, as of November 30, 1956. Our invoices to you, as you know, are based on provisional overhead and G & A rates. The difference between these provisional rates and the rates which we are actually incurring will be billed to you after AEC audit. We estimate this adjustment to be approximately \$4,800. We expect, therefore, because of the additional work mentioned above and the overhead and G & A adjustment, a total of approximately \$9,800 additional will be billed to you. I have been unable to determine the basis for de-obligating funds for this contract, which you mentioned in our telephone conversation.

Our technical people inform me that it will take several months to conclude arrangements for suitable disposal of the thorium, primarily because of the indemnification problem and winter weather. I feel, therefore, that the contract should be amended to allow this additional time, and I am enclosing Modification #3 to extend the date to approximately June 30, 1957. If you concur, I would appreciate having this Modification executed and two copies returned to us.

Very truly yours,

SYLVANIA ELECTRIC PRODUCTS INC.

Garth W. Edwards, Controller
Atomic Energy Division

GWE:bek
enc.

USDOE 016625

Office Memorandum • UNITED STATES GOVERNMENT

TO : James Wise, Director, Finance Division
Savannah River Operations Office

DATE: OCT 12 1959

FROM : Lyman Bryan, Director, Finance Division
New York Operations Office

SUBJECT: SYLVANIA-CORNING NUCLEAR CORP. CONTRACT AT-(30-1)-366
AUDIT OF SPONSOR TASK C-33 SAVANNAH RIVER OPER. OFFICE
AUDIT PERIOD: JULY 1, 1958 to APRIL 30, 1959

SYMBOL: FA:FLP

In performing our audit of direct charges for the above period under the subject prime contract, we reviewed the billings under Sponsor Task C-33, pursuant to Appendix "C", Amendment #15.

Summary of Findings

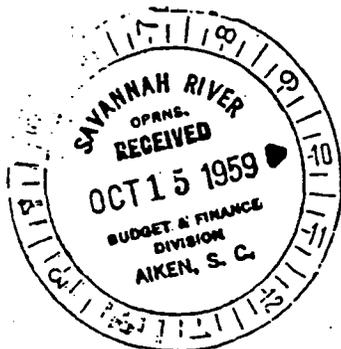
During the period audited the contractor billed for an adjustment of the overhead and G & A expense applicable for the calendar year 1957, using the following rates negotiated by this office:

Period	Negotiated Fixed Rates			Home Office G & A
	Metallurgy Laboratory	Division G & A	Corporate G & A	
1/1/57 - 3/31/57	164.3%	7.4%	-	3.03%
4/1/57 - 6/30/57	190.2%	-	16.6%	-

The one invoice presented for reimbursement during this audit period represents the adjustment of overhead and G & A based on the above changes in rates:

<u>Inv. No.</u>	<u>Period</u>	<u>Costs</u>	<u>Fee</u>	<u>Total</u>
N 300	1/1/57 - 6/30/57	\$150.39	-	\$150.39

We reviewed the contractor's adjustments based on the fixed negotiated rates and found them to be correct.

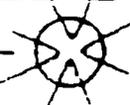


Lyman Bryan
Roland

DIR.	2	
ASST. DIR.	3	
...	1	<i>John</i>
BUDGET		
ACCTG.	4	AF

E

SYLCOOR

SYLVANIA-CORNING
NUCLEAR CORP.

Responsive Doc 12

BAYSIDE, NEW YORK

TELEPHONE
FACILITY 1-1212

May 2, 1959

Mr. R. C. Blair, Manager
Savannah River Operations Office
U. S. Atomic Energy Commission
P. O. Box A
Aiken, South Carolina

Subj: Contract AT(30-1)EN-366, Proposed Sponsored Task C-24

Dear Mr. Blair:

Under date of April 17, 1959, we submitted to du Pont an optional three-part proposal for a development and sample-making program to be conducted as a sponsored task under the subject research and development contract being performed at our Bayside engineering laboratory. It appears that du Pont has chosen the first alternative of our proposal which provides for the least number of samples. Among other things, this proposal was discussed during our May 22nd meeting at Savannah River and specifically with reference to our requested Certificate of Indemnity Assurance and the amount of fixed fee.

With respect to the first item, we were told that such a certificate will be issued. However with respect to the fixed fee, we were requested to submit a letter to your office in justification of the 8% that we had requested. This fee amounts to \$2,740. based on an estimated cost to us of \$34,205. Special uranium charges of \$8,095. were deducted from the fee base. In compliance therewith, we are stating below certain factors to which your office should give consideration in determining the amount of fixed fee.

1. The comparative small value of the agreement which should merit a higher percentage of fee as compared to a large value contract.
2. The proposed work would involve the use of Sylcor owned high cost equipment which was recently acquired.
3. Although historically we have been receiving a 5% fee on all of our AEC work, it is our understanding that the Commission and the Department of Defense are now amenable to higher fees as an incentive to carry out research and development work more efficiently and economically.
4. The granting of a higher fee will set no precedent for the New York Operations Office or other sponsors in fee negotiation but that the fee for each program or task under the contract will be negotiated solely on its own merits.

USDOE 016620

SYLVANIA - CORNING NUCLEAR CORP.

- 2 -

5. In general, payment of higher fees will enable this company to invest in necessary research and development equipment rather than have the government furnish such.

We would appreciate your early consideration of this additional information, and trust that the fee to be paid may be fixed at an early date in order that we can start work on this project. At such time, we will prepare the necessary forms and forward them to your office.

Very truly yours,

SYLVANIA-CORNING NUCLEAR CORP.

Garth W. Edwards

Garth W. Edwards
Treasurer

GWE:MCC:HM

*Fee will be paid at a 6% rate per information
received from R. P. McC. Co.*

U. S. ATOMIC ENERGY COMMISSION
OUTGOING TELECOMMUNICATION MESSAGE

Responsive Doc 11

(See reverse side for instructions)

FROM: R. C. BLAIR, MANAGER, SAVANNAH RIVER	OFFICIAL BUSINESS	
	<i>[Signature]</i> (Signature of certifying official)	
	PRECEDENCE DESIGNATION ROUTINE	ENCIPHERED BY

TO: GARTH E. EDWARDS, TREASURER SYLVANIA-CORNING NUCLEAR CORP P. O. BOX 59 BAYSIDE, L. I., NEW YORK	DATE OF MESSAGE: 1959 JUN 17 AM 9 56	JUN 17 1959
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IN ACCORDANCE WITH TELEPHONE CONVERSATION BETWEEN MR. M. C. CULLEN AND MR. R. A. McFERLY JUNE 15, 1959, YOU ARE AUTHORIZED TO PROCEED WITH DEVELOPMENT OF URANIUM OXIDE FUEL ELEMENTS AND FURNISHING OF FOUR (4) SAMPLES IN ACCORDANCE WITH ITEM A OF SYLOR'S PROPOSAL TO E. I. DU PONT DE NEMOURS AND COMPANY, PRIME CONTRACTOR OF THE COMMISSION AND MR. CULLEN'S LETTER OF JUNE 12, 1959. THE ESTIMATED COST OF THE WORK IS \$42,360.00, EXCLUSIVE OF FIXED FEE. THE FIXED FEE FOR THE WORK IS \$2,056.00. THE ABOVE WORK, TO BE PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF CONTRACT AT(30-1)GEN-366, PENDING PREPARATION OF AN APPROPRIATE APPENDIX C AGREEMENT BETWEEN SYLOR AND SROO / INCORPORATING THE ABOVE WORK INTO THE CONTRACT. AS REQUESTED IN YOUR PROPOSAL OF APRIL 17, YOU ARE AUTHORIZED TO PURCHASE THE FUSED UO₂ REQUIRED FOR THE WORK. ALSO, WE REPRESENT THAT THE MATERIAL IS FOR USE BY DU PONT UNDER CONTRACT AT(07-2)-1, WHICH INCLUDES A NUCLEAR HAZARD INDEMNITY CLAUSE AUTHORIZED PURSUANT TO SECTION 170 OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED. END REF AC:RAMCF:EW

	OBLIGATION RECORDS		GENERAL LEDGER		
	DATE	INITIAL	DATE	INITIAL	
POSTED CONTROL	6/30	WKM			2691-9/ TASK C-74 \$ 44,416 WKM 6272
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CONTRACT AT(30-1)-GEN-366

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE II

Work under paragraph 2 of Article II, Contract AT(30-1)-GEN-366, shall be performed by the Contractor if and to the extent that the document provided for below is fully completed and executed.

"AGREEMENT ADDING CERTAIN WORK TO CONTRACT NO. AT(30-1)-GEN-366 BETWEEN THE UNITED STATES OF AMERICA AS REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION, AND SYLVANIA-CORNING NUCLEAR CORPORATION"

This Agreement between Sylvania-Corning Nuclear Corporation (the "Contractor"), and the United States Atomic Energy Commission represented by the Manager, SROO (the "Commission"), adds the following work under paragraph 2 of Article II of the above-identified Contract:

1. Description of Work

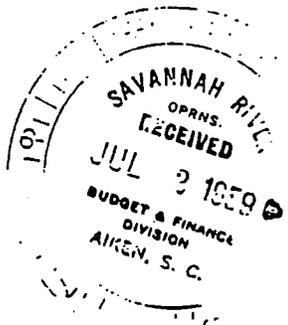
Development of uranium oxide tubular fuel elements and furnishing of four (4) samples in accordance with Item a of the Contractor's proposal, dated April 17, 1959, signed by Mr. Garth W. Edwards and addressed to E. I. du Pont de Nemours and Company, Prime Contractor of the Commission's Savannah River Plant, and the Contractor's letter to the Commission, dated June 12, 1959, signed by Mr. M. C. Cullen and addressed to Mr. R. C. Blair

2. Performance of the work shall begin on or after June 17, 1959, and shall be completed on or before January 31, 1960.

3. The estimated cost of the work described in Item 1, above, is \$42,360, exclusive of fixed fee.

4. The fixed fee for the work added hereby is \$2,056.

5. \$44,416 has been obligated for work added hereby (see paragraphs 4b and 4c of Article IV, THE CONSIDERATION, of Prime Contract AT(30-1)-GEN-366.



Obligated from teletype from Blair to Garth Edwards. 272 6/17/59 w/27

Handwritten notes and a table. Notes include "Carter" and "Blair". The table has columns for "EXHIBIT" and "RECORD" with handwritten entries "A-13" and "1-F".

6. Except as herein modified, all of the provisions of said Contract are applicable with respect to work added hereby.

UNITED STATES ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE

BY: *R. C. Blair*
R. C. Blair, Manager

SYLVANIA-CORNING NUCLEAR CORPORATION

BY: *Garth W. Edwards*
Garth W. Edwards
TITLE: Treasurer

Modification No. 1 to
TASK NO. C-74 under
Contract AT(30-1)-GEN-366

CONTRACT AT(30-1)-GEN-366

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE II

WHEREAS, Sylvania-Corning Nuclear Corporation (the "Contractor"), and the United States Atomic Energy Commission, represented by the Manager, SROO (the "Commission"), entered into TASK NO. C-74 for performance of work under Paragraph 2 of Article II of the above-identified Contract; and

WHEREAS, the parties desire to amend said TASK NO. C-74 as hereinafter said further;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. Item 2 of the TASK is changed to read as follows:

"Performance of the work shall begin on or after June 17, 1959, and shall be completed on or before May 31, 1960."

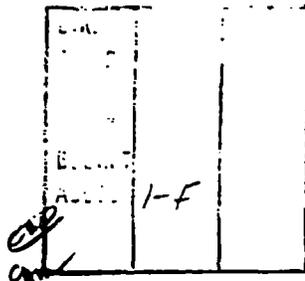
2. Except as herein modified, all of the provisions of TASK C-74 remain unchanged.

UNITED STATES ATOMIC ENERGY COMMISSION
SAVANNAH RIVER OPERATIONS OFFICE

BY: *[Signature]*
Manager 4-5-60

SYLVANIA-CORNING NUCLEAR CORPORATION

BY: *[Signature]*
Garth W. Edwards
TITLE: Treasurer



A. J.

5-11-59

DEC 23 1959

Mr. M. C. Cullen
Contract Administrator
Sylvania-Corning Nuclear Corporation
Post Office Box 59
Bayside, Long Island, New York

Dear Mr. Cullen:

As requested by your letter of December 17, 1959, extension of SBCC Sponsored Task C-7A under Contract AT(30-1)-ONR-366, from the period January 31, 1960, to March 31, 1960, is hereby approved.

Very truly yours,

E. C. Slair
Manager

CC: Manager's Office

DEWEY & LEBOEUF

Dewey & LeBoeuf LLP
1101 New York Avenue N.W.
Suite 1100
Washington, D.C. 20005-4213

tel (202) 986-8287
fax (202) 986-8102

October 22, 2007

**SUBMITTED PURSUANT TO FED. R. EVIDENCE 408; FOR PURPOSES OF
SETTLEMENT DISCUSSIONS ONLY**

Mr. Michael D. Rowe
Trial Attorney
Environmental Defense Section
U.S. Department of Justice
Environmental & Natural Resources Division
P.O. Box 23986
L'Enfant Plaza Station
Washington, D.C. 20026-3986

**Re: GTE Operations Support Incorporated Claim for Reimbursement of
Response Costs for Cleanup of Sylvania Electric Products Incorporated
Nuclear Fuel Production Facility, Hicksville, New York**

Dear Mr. Rowe:

On behalf of GTE Operations Support Incorporated ("GTEOSI"), its parent, and affiliates, we are submitting this claim to the United States of America for reimbursement and/or contribution from the Federal Government for its fair share of past, present, and future response costs to investigate and remediate radiological and other hazardous contamination at the former Sylvania Electric Products Incorporated ("Sylvania") nuclear fuel element research and production facility located at what is now 70, 100, and 140 Cantiague Rock Road in Hicksville, Town of Oyster Bay, Nassau County, New York ("Hicksville Site" or "Site"). This claim is made pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, as amended ("CERCLA"), 42 U.S.C. § 9607, and in the alternative, 42 U.S.C. § 9613.

I. Overview of the Claim for Reimbursement of Response Costs under CERCLA

As the Cold War intensified, the Atomic Energy Commission ("AEC") entered into a contract with Sylvania,¹ a leader in the field of metallurgical research, to perform research targeted at improving nuclear fuel elements, also known as "slugs," and, later, to mass produce nuclear fuel elements to be used primarily in nuclear weapons production reactors at Hanford, Washington

¹ The Hicksville facility was owned and operated by Sylvania Electric Products Incorporated (a Massachusetts corporation) from 1952 until 1957, by Sylvania-Corning Nuclear Corporation (a Delaware corporation) from 1957 until 1960; and by Sylvania Electric Products Incorporated (a Delaware corporation) until the facility closed in 1967. For convenience, these companies are referred to collectively as "Sylvania."

and Savannah River, South Carolina. The Sylvania nuclear production facility was operated for the benefit of United States government, and was under the direction and control of the AEC, from 1952 to 1966. While the Hicksville Site also performed work for other federal agencies, and a small amount of commercial nuclear work during that same period, the overwhelming bulk of the work was performed for AEC under Contract No. AT (30-1)-1293 ("Contract 1293" or "Contract"). At the height of its production capability, the Hicksville Site processed hundreds of tons of uranium materials each year under its Contract with AEC. The uranium and other radionuclides processed at the site were then, and are now, the property of the United States government. During those operations, equipment and metals used for production of fuel elements were cleaned and degreased using solvents, including the chlorinated solvent tetrachloroethylene ("PCE"). Radionuclide and solvent wastes from production at the Site were periodically disposed of in on-Site recharge basins, leaching pools, and sumps designed for waste materials generated under the Contract and licenses issued by AEC.

The AEC was fully aware of these discharges and at all times retained ownership of the nuclear materials, wastes, and residues under Contract 1293. AEC also supplied materials and owned much of the equipment used in the nuclear work at the Site, including two degreasers. That equipment was returned to the United States government when Contract 1293 was terminated. To this day, the Federal Government retains ownership of the radionuclides remaining at the Site.

From the first day of operations in 1952 through nuclear decontamination and decommissioning of the Site in 1966, AEC restricted access to the Site, conducted inspections, and regulated all aspects of nuclear research and production there, including safety and environmental management. Despite the fact that the AEC released the property for unrestricted use on June 29, 1966, after determining that the property posed "no hazard to health and safety," subsequent soil sampling taken circa 1979 by the United States Department of Energy ("DOE"), a successor agency to the AEC, determined that radioactive soil contamination remained at the Site. Perhaps because the AEC previously had determined that the Site was suitable for unrestricted use, DOE did not immediately release this information to Sylvania or its successors in interest. In fact, the Federal Government's communications for two decades with Congress and others insisted that the property would not present a hazard and maintained the unrestricted use status for the property.

Eventually, however, investigations conducted on behalf of, or in cooperation with, federal and New York State agencies found extensive contamination of soils and groundwater with various hazardous substances as defined by CERCLA and its implementing regulations, including the radioactive elements of the government-owned uranium and thorium, as well as PCE and nickel waste forms, generated during Sylvania's work for the AEC. Unfortunately, this was after Sylvania had provided assurances regarding Site conditions, sold the property, and allowed its nuclear insurance to lapse in 1983 based upon Federal Government inspections, reports, and assurances.

Pursuant to two voluntary agreements with the New York State Department of Environmental Conservation ("DEC") executed in 1999 and 2003, GTEOSI² has now expended over \$200 million for environmental response and remediation of releases of radiological and other hazardous materials at the Site. Comprehensive investigations of soil and groundwater contamination were conducted on and near the Site, eventually resulting in the excavation and transport offsite of over 200 million pounds of contaminated soil. All actions taken by GTEOSI have been consistent with the National Contingency Plan ("NCP") under CERCLA. Additional soil and groundwater investigations, as well as sampling and other response actions, continue at the Site under direction of DEC, and now also the United States Army Corps of Engineers, pursuant to the Formerly Utilized Site Remedial Action Program ("FUSRAP").

For reasons discussed in detail below, we submit that the Federal Government is responsible and liable for its fair share of the response costs as an "arranger", "transporter", and "owner" under section 107 of CERCLA. The recent unanimous Supreme Court decision in *United States v. Atlantic Research Corp.*, 127 S. Ct. 2331, 168 L. Ed. 2d 28 (2007) affirmed GTEOSI's right to recover response costs from the Federal Government under section 107 of CERCLA (June 2007).

II. Factual and Legal Basis Supporting Claim

A. History of AEC and Other Federal Involvement at the Site

In 1947, the New York Operations Office ("NYOO") of the AEC contracted with Sylvania to initiate a metallurgical research and development program seeking to improve the reliability of nuclear fuel elements. This work was conducted at Sylvania's facility in Bayside, New York. On December 10, 1951, the NYOO entered into a letter Contract No. AT (30-1)-1293 with Sylvania, and asked the company to build a pilot plant to continue its nuclear research and development activities

In March 1952, Sylvania purchased land in Hicksville, New York to house the pilot plant. While these lands now have been subdivided into three lots known as 70, 100, and 140 Cantiague Rock Road, they were all involved in the Sylvania's operations discussed in this letter. Most of the contract activities took place on what are now known as the 140 and 100 properties (the "140 and 100 Properties").

Sylvania began pilot plant operations at Hicksville in August 1952. The AEC paid for all of the initial renovations at the Site necessary for nuclear operations, as it did for all future renovations and improvements to Sylvania's contract operations. Access to the Site, and to some individual buildings, was strictly limited by fencing and other controls specified by AEC. A fully detailed government contract (retroactive to December 1951) was executed on August 10, 1953, and Contract 1293 continued in that form, with numerous modifications until September 1965.

² GTE Corp. acquired Sylvania in 1959. In 1993, GTE Corp. and its affiliates sold Sylvania to OSRAM, but it was agreed by the parties that OSRAM would be indemnified for certain environmental exposures. GTEOSI remedial activity at the Site is in accordance with that agreement.

From 1952 to 1965, Sylvania conducted nuclear metallurgical research and development and production work for AEC and other federal entities. Most of the work at the Site was conducted pursuant to Contract 1293 and various modifications to that Contract. As of January 1953, the pilot plant was producing unenriched uranium fuel elements for use in the AEC's production reactor operated by General Electric in Hanford, Washington. Contract 1293 eventually covered the pressure bonding and canning of cast and extruded uranium-aluminum fuel elements. For all times relevant to this claim, the AEC exerted substantial control over the entire Site. As detailed in this claim, the AEC: (1) contracted directly with Sylvania for nuclear work, and issued appropriate nuclear licenses; (2) facilitated contracts between Sylvania and other United States government agencies; (3) retained title to all nuclear material and necessary equipment used on the Site before, during, and after production; (4) owned some of the chemicals and metals used to process nuclear materials; (5) provided specifications and requirements for nuclear work at the Site; (6) implemented an inspection regime to ensure compliance with its requirements; and (7) oversaw, directed, and paid for all aspects of waste disposal as well as the eventual, although incomplete, decontamination and decommissioning of the Site.

In July 1954, after several months of testing, Sylvania began producing enriched uranium fuel elements for use in the plutonium production reactor at the Savannah River Site in South Carolina, an AEC defense nuclear facility operated by DuPont de Nemours and Company. Sylvania would continue producing fuel elements for the Savannah River reactor for the next eleven years. During this time, the Hicksville contract facilities basically were devoted to the production of fuel elements for use in the reactors producing plutonium at Savannah River.³ The Savannah River Operations Office ("SROO") "consider[ed] Hicksville to be a part of its fundamental production chain."⁴ Savannah River itself was essential to producing a nuclear deterrence capability to counter the efforts of the Soviet Union.

Starting in November 1955, the AEC allowed Sylvania to perform other government work. Under this agreement, Sylvania produced Mark VII-A nuclear fuel cores in cooperation with the Oak Ridge and Fernald Operations Offices for use in the Savannah River production reactor. In 1957, Sylvania manufactured almost half a million Mark VII uranium fuel elements. The SROO retained oversight of this work, which continued into early 1963.

Production for Sylvania's contract operations primarily took place in Building 1 and most of Building 2, which were located on the 140 and 100 Properties, respectively. Sylvania's contract operations also used Building 6 (for solvent and oil storage), Building 7 (as a pump house), and Building 8 (for burning and chemical processing). Contract liquid wastes were disposed of in sumps located on 140 and 100 Properties and intermittently in a sump located adjacent to Building 4 on the present site of 70 Cantiague Rock Road (the "70 Property").

The government supplied Sylvania with all the unenriched and enriched uranium (and later thorium) necessary for operations and secured transportation of the raw materials to the

³ Letter from D.B. Metz to Ernest B. Tremmel re capabilities of Sylcor Division, dated March 16, 1964, at 2.

⁴ Memo to Files, re Meeting at NYOO Re Sylvania, dated November 21, 1955 at 1.

Site. Under the terms of Contract 1293, AEC retained title to the "products, by-products, wastage, salvage, work-in-process, residues and scrap resulting from" these fuel elements.⁵

The government also owned all supplies that Sylvania purchased for Contract 1293 work, including the chlorinated solvents used during nuclear operations. The AEC owned at least two chlorinated solvent vapor degreasers for use in Hicksville's contract operations. Most notably, Sylvania used the chlorinated solvent perchloroethylene ("PCE") in its Contract 1293 fuel fabrication. Indeed, an entire building on the Site was dedicated to storage of oil and solvents.

Surviving records show that Sylvania was producing tens of tons of fuel elements every month under Contract 1293. Inspection reports show that Sylvania operated the facility in Hicksville in a safe, careful manner under the strict regulatory supervision of the AEC. As one report put it, "[t]he gratifying results found in this survey can be attributed to the health and safety mindedness of the [Sylvania] managerial and operating personnel."⁶

In late 1956, the AEC issued Sylvania a source material license and a license to possess a small amount of "special nuclear material" (*i.e.*, enriched uranium) at the Hicksville Site to allow Sylvania to perform nuclear-related work beyond the terms of its Contract 1293. In April 1957, it issued license SNM-82 and Sylvania built a new 25,000 square foot building (referred to as Building 4) for its licensed projects; the facilities were operational by early 1959.

Production for Sylvania's licensed work took place mainly in Building 4, which was located on the 70 Property. Some special melting operations, however, took place in one segregated room in Building 2. The licensed operation also used Building 10 (for storage) and Building 12 (for isostatic pressing). While the contract operations' monthly output of fuel elements was measured in the tens of thousands, the licensed facility's monthly output was measured usually in the hundreds, and sometimes only in the tens, of fuel elements. Based upon surviving records, the total throughput of materials under the AEC licenses was about six tons in eight years, while the throughput of materials under Contract 1293 was measured in the tens of tons per month. The combined percentage of work conducted under Contract 1293 and its nuclear licenses on behalf of AEC easily exceeded 95% of the total work conducted at the Site.

⁵ Contract AT (30-1)-1293 between Sylvania Electric Products Incorporated and the United States Atomic Energy Commission, dated March 10, 1953 (effective date December 10, 1951) at 15-16.

⁶ AEC Occupational Exposure to Airborne Contaminants Report: Sylvania Electric Products Incorporated, Hicksville Pilot Plant, dated June 30, 1955, at 4.

Much of Sylvania's licensed work at Hicksville was in direct support of AEC activities such as prime contracts with the AEC's NYOO and SROO to produce nuclear fuel;⁷ prime contracts with the AEC to provide nuclear fuel for other federal agencies;⁸ Sylvania acting as the AEC's agent to fabricate and export nuclear fuel to foreign countries;⁹ Sylvania providing nuclear fuel to United States research reactors sponsored by the AEC;¹⁰ and Sylvania fulfilling the requirements of subcontracts to the AEC's national laboratories¹¹ and private companies.¹²

⁷ Sylvania's license work included numerous prime contracts with the AEC, including contracts AT (30-1) 3303, AT(30-1) 3112, AT(30-1) 3065, and AT(30-1) 2370. These contracts involved the fabrication of multiple nuclear cores, fuel elements, and fuel rods for the AEC using both natural and enriched uranium.

⁸ Sylvania was also an AEC prime contractor providing nuclear fuel to other federal agencies over the entire life of licensed operations. For example, the AEC developed nuclear powered rockets for aerospace programs in cooperation with the National Aeronautics and Space Administration (NASA). As early as 1960, Sylvania was fabricating fuel elements under a prime contract with the AEC for NASA, and shipping them under its AEC license. This work continued for six years until the licensed operations ceased in 1966. AEC also contracted with Sylvania for the "PM-3" nuclear cores for the U.S. Navy's McMurdo reactor in Antarctica, and the U.S. Air Force's Sundance reactor in Wyoming. This work spanned from 1961 through 1966.

⁹ Sylvania also acted as the AEC's agent to fabricate and export some nuclear fuel to foreign countries. Export of nuclear materials was tightly controlled by the AEC. Export-control documents clearly show that Sylvania acted solely as the AEC's agent for these exports. And the Sylvania Job Order Log shows that the following eleven countries received nuclear fuel or other nuclear components fabricated at Hicksville: Australia, Austria, Belgium, France, Holland, Israel, Italy, Pakistan, South Africa, Sweden, and the then West Germany. This work resulted in Sylvania supporting the AEC's efforts to expand the peaceful use of nuclear power during the "Atoms for Peace" program.

¹⁰ Sylvania fabricated nuclear fuel for domestic research reactors under the AEC's Educational Assistance Program. This included work for the research reactors at North Carolina State University, University of Michigan, University of California, University of Missouri, McMaster University (Canada), Manhattan College, and Columbia University.

¹¹ The Sylvania Job Log shows that Sylvania did licensed nuclear work for many of the AEC's (now DOE's) national laboratories including Ames Laboratory, Argonne National Laboratory, Battelle Laboratory, and Brookhaven National Laboratory. This work included about 2700 elements and 68 plates. Sylvania was also a subcontractor to Phillips Petroleum for Phillip's prime contract to operate the AEC's Idaho Falls facility. Sylvania supplied Phillips Petroleum with nuclear fuel for three of the AEC's reactors at Idaho Falls: the Material Test Reactor (MTR), the Experimental Test Reactor (ETR), and the Advanced Test Reactor (ATR). At the time that the AEC negotiated the subcontract between Sylvania and Phillips Petroleum in 1960, Sylvania predicted that this work would constitute nearly 80% of the 70 Property work in 1961. This work appears to have continued over the next five years. In 1965, the maximum production capacity of the 70 Property, which was substantially lower than the 100 and 140 Properties, was being required to produce nuclear fuel for the ATR and the PM-3.

¹² These private companies included Alcoa Products, Phillips Petroleum, and Union Carbide. Sylvania was a subcontractor to Alcoa Products for Alcoa's AEC prime contract to produce nuclear fuel for the U.S. Department of the Army's Power Package Reactor (APPR). During production in 1960, Sylvania's work for the APPR alone occupied about 20% of the 70 Property's output. Sylvania also subcontracted to Union Carbide for an AEC prime contract with the AEC's Oak Ridge Operations Office. Sylvania fabricated 375 fuel assemblies under license for this subcontract.

Inspection reports show that Sylvania conducted the licensed operations in a safe manner under strict supervision from AEC. As the AEC inspectors noted, "the apparent safety of current operations at Hicksville compares very favorably with the better-regulated and safety-conscious fuel fabrication facilities we have seen."¹³ The AEC renewed Sylvania's licenses until the facility ceased operations.

In early 1965, the AEC decided to terminate Contract 1293. In September 1965, the AEC informed Sylvania that it would establish and implement standards¹⁴ for decontaminating the Site to a level that would make it fit for unrestricted use. The standards were written into Sylvania's Contract. The AEC issued Modification 42 to Contract 1293, which provided for additional work, including decontamination, during the 120-day period commencing October 1, 1965.

The AEC directed that bids be secured for the decontamination of Contract 1293 area and expressly reserved the right to review the cost and specifications of the decontamination work before it commenced. Thereafter, the AEC "requested and authorized" execution of a subcontract with Isotopes Inc. to perform the decontamination work for the area.

Isotopes Inc. conducted radiation surveys of Buildings 1, 2, 7, and 8 and either decontaminated the surfaces of those buildings and the equipment inside within acceptable limits or removed them for off-site disposal. Isotopes Inc. also surveyed the concrete, asphalt, and soil surrounding the Contract 1293 buildings. Isotopes Inc. identified high levels of radiation compared to acceptable background levels. In particular, Isotopes Inc. noted that soil in some areas "indicated heavy soil contamination."¹⁵ Based on this finding, Isotopes Inc. removed four inches of topsoil from limited areas of the grounds for off-site disposal.

In January 1966, Isotopes Inc. presented Sylvania and the AEC with a report that included a Certificate of Decontamination. Based on the Isotopes report, in February 1966, New York State declared that "the former AEC Facilities at the above address is [sic] hereby declared fit for use as other than a radiation installation and you are hereby deemed to have complied with Industrial Code Rule 38-29."¹⁶ Excluded from this declaration were any portions of the contract site utilized by the licensed operations. Under Contract 1293, Sylvania's decommissioning expenses were allowable costs, and in fact were reimbursed by the AEC.

¹³ Memo from Robert W. Kirkman, Director, Compliance Division, NYOO to Robert Lowenstein, Acting Director, Division of Licensing and Regulation re Transmittal of License Compliance inspection Report - 10 CFR 40 and 70, dated May 4, 1961 at 4.

¹⁴ Telex from R.C. Blair to W. Mandaro re Decontamination of Hicksville Facility, dated September 1, 1965: *see also* Memo from Alex F. Perge to P.J. Hagelston re Surface Contamination Control Criteria for Unconditional Release of Contaminated Property, dated August 2, 1965. Although the AEC set standards for surface decontamination, it did not set decontamination standards for soil or for beta or gamma radiation at the contract operations of the Hicksville Facility.

¹⁵ Report by F.J. Bradley, Ph.D., Isotopes, Inc. re Decontamination of Sylcor 1293 Area Hicksville, Long Island, New York, dated January 3, 1966 at 5-9.

¹⁶ Letter from Morris Kleinfeld, M.D. to Henry Grieb re decontamination of Hicksville facility, dated February 1, 1966.

In April 1966, the AEC sent its own inspector to conduct a limited survey of the Contract 1293 area to confirm that it had been adequately decontaminated by Isotope. The inspector's first survey readings indicated radioactivity above the surface standards set by the AEC. In response, the AEC made at least 200 separate survey measurements of the contract buildings. The AEC inspector directed Isotopes Inc. to perform additional decontamination work in the affected areas of the building. The AEC also arranged for an additional inspection later in the month. But there is no evidence that the AEC actually conducted additional soil surveys.

In May 1966, the AEC concluded that "the buildings are now clean and within acceptable radioactivity limits."¹⁷ In June 1966, the AEC informed Sylvania that the contract portion of the Hicksville facility was fully decontaminated.¹⁸ In reliance on the AEC's representation that the buildings and surrounding grounds were safe for normal use, Sylvania sold the property that had housed its contract operation, now referred to as the 140 and 100 Properties, in March 1967.

In April 1966, the AEC set decontamination levels for the licensed portion of the Hicksville facility. Unlike the AEC standards for the contract operations, the AEC standards for the licensed operations also included beta-gamma radiation. But, as with the contract operations, there is no evidence that the AEC set any standards for decontamination of soil on the grounds of the licensed operations.

In October 1966, Sylvania hired a private contractor, Atcor, Inc., to decontaminate the remaining licensed portion of the Site. In January 1967, Atcor performed the decontamination and issued a report on its work to Sylvania and the AEC.

Over the next two months, the AEC and New York State jointly inspected the Site. In early February 1967, New York State declared that "building #4 of your former commercial facility is hereby released and declared fit for non-radioactive use and you are hereby deemed to have complied with Industrial Code Rule 38-29."¹⁹ This release excluded one sump – "pending the further analysis of soil samples" – and a portion of Building 2 – pending "further decontamination and subsequent surveys."²⁰ Later that same month, following additional work to address the concerns raised and a second inspection by the AEC and New York State, New York State declared that the remaining portions of the Site, "which were excluded in our prior release are hereby found to be fit for non-radioactive use and to have complied with New York State Industrial Code Rule 38-29."²¹

¹⁷ . Memo from P.J. Hagelston to J.S. Hopkins re Approval of Release of Sylcor Buildings for Unlimited Use or Sale, dated May 5, 1966.

¹⁸ Telex from N. Stetson to W.R. Mandaro re release of Hicksville facility, dated June 29, 1966.

¹⁹ Letter from Morris Kleinfeld, M.D. to Herbert Watts re decontamination of commercial facility, dated February 17, 1967.

²⁰ *Id.*

²¹ Letter from Morris Kleinfeld, M.D. to Herbert Watts re decontamination of Hicksville facility, dated February 28, 1967.

In April 1967, the AEC determined that the entire facility had been fully decontaminated. At Sylvania's request, the AEC removed Hicksville from Sylvania's Special Nuclear Material License, finding that "we have concluded that, due to the insignificance of the contamination which might be present in this particular instance, no hazard to health and safety is involved and no license would be required for any persons possessing or occupying the Hicksville, New York facilities."²²

During August 1967, at the request of New York State, Atcor took additional soil samples from a sump on the site of the licensed operations and reported that all concentrations were less than 0.05 percent uranium. In September 1967, based on these samples New York State reaffirmed its previous findings that "your property on Cantiague Road in Hicksville is hereby deemed fit for non-radioactive use."²³ The State then cancelled Sylvania's registrations relating to the Hicksville facility.

Sylvania did not use nuclear materials at the Site again. GTEOSI is unaware of any other operations that used nuclear materials on the Site before 1952 or after 1967. The Company continued to own the site of its former licensed operations, now referred to as the 70 Property, for another five years. It used part of the property itself as a laboratory that performed metallurgical coating work, and leased another portion of the property to a commercial tenant. In August 1972, Sylvania sold the 70 Property to Dewiant Corporation.

In October 1973, the AEC's Division of Waste Management ("DWM") asked the AEC's operations offices to identify all former contract facilities under their control and to state whether these sites had been adequately decontaminated. The next month, the SROO responded that the former Hicksville facility was the only decommissioned site within its jurisdiction and that "cleanup is considered adequate and no further action is planned."²⁴ As evidence, the SROO referred the DWM to a memorandum it had submitted to the AEC's Division of Operational Safety earlier in the year. In that memo, the SROO had provided a summary of the decontamination process, and provided documentary evidence of the cleanup.²⁵

In early 1979, at the request of DEC, the DOE, which had by this point assumed responsibility for the now-defunct AEC's contracts, dispatched a Radiological Assistance Program ("RAP") team to inspect the site of the former facility in Hicksville.

The DOE'S inspection found radioactive contamination in surface and subsurface soil on the site of the former Hicksville facility's contract operations ranging from 38 to 1,362 picocuries per gram. The concentration of the uranium found at the site by the DOE was

²² Letter from Donald A. Nussbaumer to Jerold B. Kreischer re SNM-82, dated April 28, 1967.

²³ Letter from Morris Kleinfeld, M.D. to Herbert Watts re decontamination of commercial facility, dated September 19, 1967.

²⁴ Memo from N. Stetson to Frank K. Pittman Decontamination and Decommissioning of AEC Facilities (Your TWX, 10/29/73), dated November 13, 1973.

²⁵ Memo from G.H. Giboney to L. Joe Deal re Radiological Cleanup and Site Disposal Actions, dated May 2, 1973.

approximately eight times greater than that for which a Nuclear Regulatory Commission ("NRC") license was required in 1979.

Based on these results, the RAP team informed DOE headquarters that **"the levels found at this site may be of some concern."**²⁶ DOE, however, took no direct action to respond to those concerns and did not notify Sylvania, its predecessors, or successors in interest.

In the 1980s, the DOE, acting through its FUSRAP, again addressed the question of whether the former facility in Hicksville was currently contaminated. By late 1987, the facility appeared on a list of sites that had been "eliminated from FUSRAP consideration."²⁷ Under "status," the DOE noted that "This site conducted AEC and licensed work. Any action on the site is under the authority of the NRC."²⁸ The DOE apparently reached this erroneous conclusion based on the false premises that the operations under Contract 1293 at Hicksville had been adequately decontaminated, and that the AEC licensed work performed at Hicksville was commercial in nature. In fact, neither of these premises was true. None of the property was adequately decontaminated. In addition, as detailed previously, even the licensed work should have been determined to be FUSRAP eligible since it was performed overwhelmingly for AEC itself, AEC's prime contractors, the National Laboratories, and other federal agencies— and not private commercial ventures.

In June 1994, DOE's Oak Ridge National Laboratory ("ORNL") conducted a review of the former Hicksville facility on behalf of the NRC, as part of the NRC's review of all retired licenses in the United States. Specifically, ORNL looked at records of the decontamination of the licensed operations conducted in 1967.

After reviewing the records, ORNL concluded that uranium concentrations in soil taken at the licensed operations during the decontamination process were "3,000-25,000 times greater than naturally occurring uranium concentrations... and there is no indication that surveys or soil analyses were performed in the vicinity of storm or floor drains."²⁹

In January 1995- despite its own laboratory's conclusion six months earlier that the Site was contaminated - the DOE wrote a letter to Lewis Yevoli, the Supervisor of the Township of Oyster Bay, New York, saying that the Hicksville facility complied with all applicable health and safety requirements. In this letter, the DOE acknowledged that the Site "performed work for DOE predecessor agencies."³⁰ DOE also informed the Township that "we are pleased to

²⁶ Letter from David Schreller to William E. Matt re Prior AEC Site, dated May 24, 1979 (emphasis added).

²⁷ Sites Eliminated from FUSRAP Consideration as of December 31, 1987, dated December 21, 1987.

²⁸ *Id.*

²⁹ Retired License Review of License SNM-82, signed by James S. Bogard, dated June 13, 1994.

³⁰ Letter From James W. Wagoner II to Lewis Yevoli re former Sylvania-Corning Plant site, with enclosures, dated January 23, 1995.

reaffirm our determination that conditions at this site meet applicable requirements for protection of public health” and that “additional investigations of this site are unnecessary.”³¹

It appears that the DOE reached this conclusion by looking at the wrong file. The DOE’s Considered Sites Database – which lists all sites considered for inclusion in the FUSRAP program – includes two sites operated by Sylvania during the Cold War. The first is the Hicksville facility, named in the Database as “Sylvania Corning Plant” and designated as site “NY.19.”³² The second, concerning a facility operated by Sylvania in Bayside, Queens in New York City, is named in the database as “Sylvania-Corning Nuclear Corp., Inc., Sylvania-Laboratories” and designated as site “NY.07.”³³

The January 1995 letter sent by the DOE to Supervisor Yevoli references the name of the facility in Hicksville – “Sylvania-Corning Plant” – but encloses documents relating to the Department’s inspection of the Bayside facility. Further, the copy of this letter Sylvania obtained from the DOE’S files contains a handwritten notation listing the site number for the Bayside facility – NY.07. This strongly indicates that the DOE concluded that the facility in Hicksville had been properly decontaminated by looking at records for the Bayside facility.

In December 1995, the NRC again reviewed both the decontamination records of 1967 and also the DOE inspection of 1979. It determined that “[t]he DOE and AEC surveys show that uranium and thorium soil contamination existed as late as 1979. This is the main concern with this file unless it can be shown that the Site was remediated after 1979.”³⁴ The NRC recommended informing the New York State authorities of its analysis.

In August 1996, the NRC conducted its own soil and groundwater radiation surveys of the facility in Hicksville former 1293 Contract operations. These surveys showed that “[r]adiological exposure rates in excess of the NRC criteria for release for unrestricted use were identified on the eastern edge of the former Sylvania property” – specifically, on the former site of the Contract 1293 operations.³⁵ The NRC also concluded that “[a] sample of groundwater . . . indicated gross alpha activity in excess of the criteria used by the NRC for release for unrestricted use.”³⁶ In sum, these tests confirmed the ORNL’s previous conclusions of June 1994 and December 1995 – that the Site was contaminated.

The NRC tests showed that soil contamination existed at the Site in concentrations ranging from 27.7 to 2,613 picocuries per gram – consistent with the results of DOE’S RAP team sampling in 1979. The NRC’s report on these results noted that the NRC release limit at that

³¹ *Id.*

³² FUSRAP Considered Sites Database Report, NY.19.

³³ FUSRAP Considered Sites Database Report, NY. 07.

³⁴ License No. SNM-82, Review of the Termination and Confirmatory Surveys for Sylvania Electric Products, Hicksville, New York Site, dated December 1, 1995 at 4.

³⁵ U.S. Nuclear Regulatory Commission Region I Inspection Report re SNM-82, dated November 27, 1996 at 1.

³⁶ *Id.*

time for processed uranium in soil was 35 picocuries per gram. In August and September 1996, representatives of the DEC conducted additional soil and groundwater tests that confirmed these elevated levels.

In January of 1997, soon after NRC's and DEC's tests in the last months of 1996, representatives of the DEC met with representatives of GTEOSI, which was formed to close certain former GTE operations and to manage GTE environmental indemnity obligations.³⁷ Rather than waste time trying to establish the appropriate party to address the contamination, or whether all of the conditions prerequisite to GTE's indemnity obligations were satisfied, GTEOSI immediately began to investigate the contamination issues on Site. The parties agreed that GTEOSI would develop a work plan for the investigation of the Site.

A month later, GTEOSI submitted a proposal for an investigation of the Site. The company put forward its draft Conceptual Work Plan in February 1997. The plan outlined the tasks necessary to inspect the Site for "process residuals," especially uranium and/or thorium produced by the facility's work for the AEC. After conducting public meetings and accepting comments, several revisions to the plan were made. Public meetings were conducted throughout the investigative and remedial process. In the winter of 1997, while negotiating the scope of the Voluntary Investigation Work Plan, GTEOSI conducted a non-intrusive investigation of the Site, in conjunction with DEC, consisting of a ground penetrating radar survey, an Ultrasonic Ranging and Data System ("USRADS") survey, and a survey to produce a current map of the Site. DEC approved a final version of the plan, entitled the "Final Voluntary Investigation Work Plan- Revised May 1998," on June 26, 1998.

In April 1999, GTEOSI entered into a formal agreement with the DEC under which GTEOSI would investigate the extent of on-Site and off-Site chemical and radiological contamination associated with former Hicksville facility.

In the summer of 1999, the "Initial Investigation" included the installation of 128 soil borings, and the completion of five temporary wells. The data collected for contaminants uranium ("U"), thorium ("Th"), volatile organic compounds ("VOC"), semi-volatile organic compounds ("SVOC"), polychlorinated biphenyls ("PCB"), and metals was used to evaluate the nature and extent of process residuals related to former Site use. Sampling of existing Site groundwater monitoring wells, five new temporary wells, and three upgradient wells on Nassau County Department of Public Works' property was also performed to evaluate the impact of process residuals and upgradient contaminants on the groundwater under the Site.

In the winter of 2000, a "Supplemental Investigation" was performed to further evaluate areas identified during the Initial Investigation where process residuals consisting of U-238, Th-232, VOCs and nickel ("Ni"), were potentially located. These locations were characterized through the advancement of 68 new soil borings (includes several borings with multiple designations), related soil sample analyses, and sampling of on-Site groundwater wells.

³⁷ See notes 1 and 2 *supra*.

For the thirty year period from 1966 to 1996, the Federal Government took no steps to notify Sylvania, its successors in interest or any other related party about contamination problems. In fact, DOE's communications in the 1990s and into the new millennium failed to disclose the NRC findings to other interested parties. In April 2001, Congressman Peter King of New York, whose district includes Hicksville, wrote to the DOE requesting information on the Hicksville facility. In June 2001, Secretary of Energy Spencer Abraham responded that "[t]he portion of the facility involved in AEC work was decommissioned and decontaminated in 1965 and released back to Sylvania for 'unconditional' use."³⁸ The Secretary did not mention that this decontamination was inadequate and that contamination had been confirmed at the Site by his own agency or by the NRC in 1979 and again by the DOE in the mid-1990s.

In 2001, a soil sampling program on the Nassau County Golf Course Driving Range ("GCDR") surface was conducted to verify that radionuclides were not present. The GCDR property is adjacent to the Site. Also, in the winter of 2001, an excavation test and a subsurface geophysical screening program were conducted to provide regulators with a better understanding of the subsurface conditions that may affect remediation, to allow development of protocols for radioactivity field screening, and to define the correlation between field instrument readings and soil concentrations of radionuclides.

The fall 2002 Investigation included the advancement of 170 soil borings for steel sheet pile placement. Additional surface soil samples were collected at the GCDR to further evaluate radionuclide readings near sample location GCDR-1.

In January 2003, GTEOSI entered a second formal agreement with DEC and committed to remediate the Site's contaminated soil. DEC approved GTEOSI plan for remediating the Site. The final details of this plan were captured in a version produced later in the year and approved by the DEC after a public hearing and a review of comments by interested parties.

The Interim Drainage Investigation (2003) included the installation of six soil gas survey points and six test pits to characterize the area proposed for use as the interim drainage system, plus the analysis of soil samples collected during the installation of the drainage system. An Additional Soil Boring Program (2003) included the advancement of 27 soil boring to aid in the characterization of potential mixed waste areas.

The soil remediation program was a massive excavation project performed with heavy construction equipment that began in early 2003. Soil was excavated from an area that ultimately encompassed 14 "cells" located mainly to the east of the 140 building, east and south of the 100 building including about 50 feet onto the off-Site driving range, and north of the 70 building. Since the start of the excavation a total of 9,204 containers were filled and disposed of at Envirocare of Utah, Inc., now known as EnergySolutions, a low-level radioactive waste disposal facility. Approximately 200 million pounds of contaminated soil were excavated. The cells were backfilled with clean soil.

³⁸ Letter from Spencer Abraham to Peter King re Sylvania Corning Nuclear Corporation Plant, dated June 11, 2001.

The DOE sent the U.S. Army Corps of Engineers (the "Corps") a letter in late 2004 reversing its previous position and stating that the Hicksville Site was eligible to be included in FUSRAP. The Corps published its Preliminary Assessment under FUSRAP in May 2005 (the "May 2005 PA"). On September 30, 2005, the Corps advised the Chairman of the Subcommittee on Energy and Water Development, Committee on Appropriations that "[b]ased on [the May 2005 PA] the Corps has determined that radiological contamination in excess of current standards exists at the Site and that there is a high probability that [further] remedial action will be required." The Corps is presently conducting a Remedial Investigation/ Feasibility Study for the Site under FUSRAP.

DEC has also determined that groundwater at and near the Site has been contaminated. In cooperation with the DEC and the Corps, GTEOSI has continued to sample the groundwater both on-Site and off-Site to determine the source and the extent of the contamination, and to ascertain if there are any potential impacts to the drinking water supplies in the area.

B. Federal Government Liability for Cleanup Cost at the Site under CERCLA

Based upon the factual information presented above, we submit that the Federal Government is subject to CERCLA liability at the Site for its fair share of the past, present, and future response costs incurred, or to be incurred, to address the contamination at the Site. Despite demands by GTEOSI, the United States has not agreed to reimburse costs, nor has it in fact paid for the costs, for any environmental response at the Hicksville Site under the two DEC Voluntary Agreements.

To recover response costs for the cleanup of a site under CERCLA, the person seeking recovery must demonstrate that: (1) the site in question is a "facility" as defined by 42 U.S.C. § 9601(9); (2) there was a "release or threat of release" of a "hazardous substance" at the facility; (3) the release caused the person seeking recovery to incur "necessary costs" to "respond" to the release or threat of release; and (4) the person against whom recovery is sought is a "responsible party" under 42 U.S.C. § 9607(a). The circumstances at the Hicksville Site satisfy each of these requirements.

Even a cursory application of the first three elements to the Hicksville Site facts clearly demonstrates that the elements are met in this case. The United States is specifically included in CERCLA's list of who constitutes a "person" at section 101(21), 42 U.S.C. § 9601(21). As such, the Federal Government is subject to liability under CERCLA to the same extent as any nongovernmental entity, pursuant to section 120(a) of CERCLA, 42 U.S.C. § 9620(a). Any doubt about a private party's ability to recover response costs under section 107 against the Federal Government was dispelled by the recent decision in *United States v. Atlantic Research Corp.*, 127 S. Ct. 2331, 168 L. Ed. 2d 28 (June 2007). A unanimous Supreme Court held that even potentially responsible parties ("PRPs") may voluntarily remediate releases of hazardous substances at facilities, and then sue other PRPs, including the Federal Government, to recover some or all of their costs under section 107(a) of CERCLA, 42 U.S.C. § 9607 (a). The private party need not wait until they are subject to a governmental administrative or judicial enforcement action under CERCLA before they seek recovery under section 107 (a).

The Hicksville Site clearly included several "facilities" within the definition provided by section 101(9) of CERCLA, 42 U.S.C. § 9601(9), which covers the types of buildings, equipment, ponds, wells, lagoons, impoundments, recharge basins, leaching pools, and sumps found at the Hicksville Site. The entire Site also qualifies as a facility because it is a "site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located." *Id.* The radionuclides, PCE, and hazardous metals initially stored and used at the Site for AEC nuclear operations-- and then partially disposed of there in the recharge basins, sumps, and leaching pools with AEC permission, in accordance with Contract 1293 -- are each "hazardous substances" within the meaning of section 101(14) of CERCLA, 42 U.S.C. § 9601(14) and are each listed as "hazardous substances" at 40 C.F.R. § 302 et seq. (2003). As detailed above, numerous "releases," and threats of continuing "releases," of these hazardous substances to the soil and to the groundwater have occurred and/or are continuing to occur at the Hicksville Site within the meaning of section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

The costs incurred by GTEOSI, to date, were in response to the release and/or threat of release of a hazardous substance at the Hicksville Site and included, but are not limited to, obtaining access to the property; monitoring and investigation of the hazardous releases; soil and groundwater sampling; construction and erection of confinement structures onsite; cleanup and removal of approximately 200 million pounds of contaminated soil, and shipment of contaminants for offsite disposal. These activities all fall within the meaning of "response" and "remedial" actions under CERCLA, 42 U.S.C. § 9601(23)-(25).

The actions taken were controlled by the Voluntary Cleanup agreements with DEC, the agency in the State of New York responsible for hazardous substance cleanup and CERCLA implementation in New York. GTEOSI expenses incurred were "necessary" costs of response, consistent with a permanent remedy for the Site, and consistent with the National Contingency Plan, codified at 40 C.F.R. Part 300 (2003).

All that remains is to demonstrate that the Federal Government is among those types of potentially responsible parties that are liable under CERCLA under these circumstances.

1. AEC "Arranged" Disposal and Transport of Hazardous Substances

The United States is liable for the costs of response under section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3), as a person who "by contract, agreement, or otherwise arranged for disposal of a hazardous substance" at the Hicksville Site. The federal courts have consistently held that an entity which arranges for a company to manufacture an end-product from materials owned and provided by the entity to the manufacturer is liable as "arranger" under CERCLA if a release of hazardous substance occurs. For example, in the seminal case of the *United States v. Vertac Chemical Corp.*, 966 F. Supp. 1491, *aff'd*, 247 F.3d 706 (8th Cir. 1997), *cert. den.*, 234 U. S. 1065 (1999), the federal courts held that a company which secured the manufacture of a chemical product was liable as an arranger where the supplying company owned the material transported to the manufacturer for processing into the new product; the company retained ownership in the material as well as the end product that was returned to it; generation of the

hazardous substance was inherent during processing of the company's material; and the processing by the manufacturer resulted in the release of hazardous substances.

The *Vertac Chemical* criteria clearly establish the Federal Government as an arranger in this case. The AEC provided specifications and funds for the renovation of the Hicksville property to make it suitable for nuclear operations. The AEC owned all of the nuclear materials, some of the process chemicals such as PCE, and much of the nuclear operations equipment provided to Sylvania, as well as the end products provided to AEC's various production reactor and research facilities, such as SROO. Contract 1293 even specified that AEC retained ownership of the residue and waste generated. That Contract, and the various AEC licenses covering the Hicksville Site, directed all aspects of production at the plant, and clearly anticipated the disposal of solvents and residual radiological and other wastes into recharge basins, sumps, leach pools, and the soil on the property. Thus, the Federal Government's control at Hicksville cleared, by a wide margin, the legal hurdle established by *Vertac Chemical* for designation as an "arranger" under CERCLA.

The courts also have determined that when a party, such as AEC here, enters into an agreement to have a plant built, and the generation of hazardous waste is a natural byproduct of the manufacturing process, and the party knew that hazardous waste would be generated, the party is liable as an "arranger for hazardous waste disposal." *See, e.g., GenCorp, Inc. v. Olin Corp.*, 390 F.3d 433 (6th Cir. 2004), *cert. den.* 126 S.Ct. 420 (2005). Again, AEC's control of the operations at the Hicksville Site in this case went well beyond the level of control required to establish the Federal Government as an arranger under *GenCorp, Inc.* principles. Contract 1293 specifically acknowledged that waste and residues would be produced. AEC not only knew that hazardous residue, byproducts and waste would be generated, but also controlled and arranged interim hazardous substance storage, treatment and disposal at the Site, as well as the ultimate decontamination and decommissioning of the Site, leading to the partial removal of the hazardous substances from the Site in 1965-66. Its successor agencies, DOE and NRC, inspected the Site and also arranged for additional cleanup, but ultimately disavowed any responsibility for the costs. The AEC specified the decommissioning and decontamination standards for the Site. It and several other federal and State of New York agencies determined, erroneously, that the Site was adequately decontaminated for unrestricted use.

Thus, the Federal Government's control of Hicksville goes well beyond that of merely supplying hazardous substances to Sylvania, and maintaining ownership of key components in the manufacture of nuclear fuel elements, although even that minimal level of control has been held sufficient to establish "arranger" status under CERCLA. *See also United States v. Hercules, Inc.*, 247 F.3d 706 (8th Cir. 2001), *cert. den.* 534 U.S. 1065 (2002); *Jones-Hamilton Co. v. Beazer Materials & Services, Inc.*, 973 F.2d 688 (9th Cir. 1992).

The United States is also liable for costs of response under section 107(a)(3)-(4) of CERCLA, 42 U.S.C. § 9607(a)(3)-(4), as a person who transported, or arranged for the transport of, hazardous substances, including uranium, thorium and solvents, including PCE, to the

Hicksville Site. *See Price v. U.S. Navy*, 818 F.Supp. 1326 (S.D. Cal. 1992), *aff'd*, 39 F.3d 1011 (9th Cir. 1994)

2. AEC and its Successor Agencies as "Owners"

Pursuant to section 107(a)(2) of CERCLA, the Federal Government is subject to liability as the owner of a "facility" at the time of the disposal of hazardous substances at the Site. 42 U.S.C. § 9607(a)(2). AEC specifically retained title, not only to the nuclear production processes and equipment on the Site, but the raw nuclear materials, as well as all "products, by-products, wastage, salvage, work-in-process, residues and scrap resulting from" the production of the fuel elements. Therefore, United States is liable for costs of response under section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2), as the owner of equipment and materials ("facilities") including two vapor degreasers used to perform Contract 1293 at the Hicksville Site.

As you know, the courts have frequently relied upon section 107(a)(2) to hold the Federal Government liable under CERCLA as the former owner of wartime or national defense-related production facilities in many different circumstances. *See, e.g., Cadillac Fairview/California, Inc. v. Dow Chemical Co.*, 299 F.3d 1019, 1030 (9th Cir. 2002); *FMC Corporation v. United States Department of Commerce*, 29 F. 3d 833, 844-45 (3rd Cir. 1994)(operator liability for wartime production facilities). As fully described above, it is evident that the Federal Government should be deemed a "prior owner" of the equipment, nuclear raw materials, solvents, and other "facilities" owned and/or paid for by AEC at the Site during the time of the release and/or disposal of hazardous substances at the Site. *See, e.g., Elf Atochem North America v. United States*, 866 F. Supp. 868, 870-71 (E.D. Pa. 1994) (the government was subject to CERCLA liability because the government owned the materials and equipment used at the production facility).

Given these circumstances, the Federal Government is clearly liable to GTEOSI under CERCLA § 107(a) for cost recovery. In addition, or in the alternative, we maintain the Federal Government is liable under CERCLA § 113 for contribution, and under the implied right of contribution as well.

III. Demand

GTEOSI is hereby submitting to the United States a demand for the reimbursement of its fair share of certain past response costs in the estimated amount of \$200 million that have been incurred at the Site to date. In addition, demand is also being made for the United States Government's fair share of any future response costs to be incurred at the Site, if not covered and paid for by the Federal Government under the FUSRAP program. Finally, demand is made for any interest incurred post-demand on the Government's fair share of the past response costs at the Site.

IV. Conclusion

In sum, we submit that the Federal Government is subject to liability under CERCLA and other relevant federal authorities at the Site with respect to the past, and present response costs incurred – as well as future costs to be incurred – by GTEOSI to investigate and remediate contamination arising from the former AEC contract and licensed operations at the Site. The Federal Government's consistent failure to notify Sylvania about known contamination at the Site is a major equitable consideration which the federal courts have found relevant during a cost recovery action under CERCLA. That failure precluded Sylvania's knowing the true conditions at the Site and led to a sale of the Site without proper protections in place. In fact, Sylvania let its nuclear insurance lapse in 1983 on the basis of Federal Government assurances. Finally, the cost of early remediation of the Site in the 1970s would have been far less than today, and would have prevented further spread of contaminants.

GTEOSI is making this submission solely for purposes of settlement discussions and requests that the details of this submission (and all related technical information) be treated as confidential. Furthermore, nothing in this submission should be treated as an admission of any fact or liability with respect to the Site or used against GTEOSI in any subsequent proceeding. In addition, GTEOSI expressly acknowledges that this submission is based on currently available information, and therefore, should additional relevant information become available, GTEOSI, its parents and affiliates hereby expressly reserve the right to modify or supplement this claim accordingly.

Respectfully submitted,

GTE/GTEOSI

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April 19, 2006

VIA FEDERAL EXPRESS

Heather L. Cote
Project Manager
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90 Canal Street, Suite 303
Boston, MA 02114

Re: Hicksville Chronology

Dear Ms. Cote:

In response to David Feldman's request, we are providing you with a chronology of the activities at the former nuclear fuel fabrication facility that operated from 1952 to 1967 at the properties currently known as 70, 100, and 140 Cantiague Rock Road in Hicksville, New York (the "Hicksville Facility").

Since we began preparing this summary, we received your document request. We are currently locating the documents that we have that are responsive to your request. We hope to have some of these additional documents available for you on Monday. The remainder will be made available as quickly as possible.

The AEC exerted substantial control over the entire site. As discussed below, the AEC: (1) contracted directly with Sylvania¹; (2) facilitated contracts between Sylvania and other U.S. government agencies; (3) retained title to nuclear material used on site before, during and after production; (4) owned the chemicals used to process nuclear materials; (5) provided detailed specifications; and (6) implemented a comprehensive inspection regime to ensure compliance with its requirements.

¹ The Hicksville facility was owned and operated by Sylvania Electric Products, Inc. (a Massachusetts corporation) from 1952 until 1957, by Sylvania-Corning Nuclear Corporation (a Delaware corporation) from 1957 until 1960; and by Sylvania Electric Products Inc. (a Delaware corporation) until the facility closed in 1967. For convenience, these companies are referred to collectively as "Sylvania."

1952-1965: Operation of Sylvania's Contract Facility

In 1947, the New York Operations Office ("NYOO") of the U.S. Atomic Energy Commission (AEC) contracted with Sylvania to initiate a metallurgical research and development program.² This work was conducted at Sylvania's facility in Bayside, NY. In December 1951, the NYOO asked Sylvania to build a pilot plant to continue its research and development activities.³

In March 1952, Sylvania purchased land in Hicksville, New York to house this pilot plant. While these lands have now been subdivided into three lots known as 70, 100, and 140 Cantiague Rock Road, they were one site when Sylvania operated it in the 1950's and 1960's. Most of the contract activities took place on what is now known as the 140 and 100 properties (the "140 and 100 Properties"), although operations and waste disposal activities do not appear to have been fully bound by the current property lines.

Sylvania began pilot plant operations at Hicksville in August 1952.⁴ (The AEC paid for all of these renovations, as it did for all future renovations and improvements to Sylvania's contract operations.⁵) As of January 1953, the pilot plant was producing natural (unenriched) uranium fuel elements for use in the AEC's production reactor operated by General Electric in Hanford, Washington.⁶

In July 1954, after several months of testing, Sylvania began producing enriched uranium fuel elements for use in the plutonium production reactor at the Savannah River Site in Georgia, which was operated by DuPont de Nemours and Company.⁷ Sylvania would continue producing fuel elements for the Savannah River reactor for the next eleven years.⁸ The Savannah River Operations Office ("SROO") "consider[ed] Hicksville to be a part of its fundamental production

² See Tab 1. Memo from P.J. Hegelston (AEC) re Background Summary of Sylvania — Contract AT(30-1)-1293, dated August 12, 1954.

³ Tab 2. Letter Contract No. AT(30-1)-1293, dated December 10, 1951.

⁴ Tab 1. Memo from P.J. Hegelston (AEC) re Background Summary of Sylvania — Contract AT(30-1)-1293, dated August 12, 1954.

⁵ Tab 3. Appraisal of AEC Funded Improvements at Sylvania Electric Products Inc. Plant in Hicksville, Long Island, New York, signed by Warren Gordon, dated October 7, 1965 at 2.

⁶ Tab 4. Memo from Process Development Branch to H.B. Fry re Detailed Report — Addendum to "Summary of Evaluation of Powder Metallurgy Project" — June 23, 1953, dated June 26, 1953.

⁷ Tab 1. Memo from Paul J. Hagelston re Background Summary on Sylvania — Contract AT(30-1)-1293, dated August 12, 1954 at 2.

⁸ Tab 5. Letter from R.E. Hollingsworth, AEC to J. Conway, JCAE, dated May 17, 1965.

chain.”⁹

Starting in November 1955, the AEC allowed Sylvania to perform other government work.¹⁰ Under this agreement, Sylvania produced Mark VII-A cores in cooperation with the Oak Ridge and Fernald Operations Offices for use in the Savannah River production reactor.¹¹ The SROO retained oversight of this work,¹² which continued into early 1963.¹³

Production for Sylvania’s contract operations primarily took place in Buildings 1 and most of Building 2, which were located on the 140 and 100 Properties, respectively.¹⁴ Sylvania’s contract operations also used Building 6 (for solvent and oil storage), Building 7 (as a pump house), and Building 8 (for burning and chemical processing).¹⁵ Contract liquid wastes were disposed of in sumps located on 140 and 100 Properties and intermittently in a sump located adjacent to Building 4 on the present site of 70 Cantiague Rock Road (the “70 Property”).¹⁶

Sylvania did a massive amount of work in its contract facilities, which were “devoted basically to the production of fuel elements for the manufacture of plutonium at Savannah River.”¹⁷ For example, in 1957 Sylvania manufactured almost half a million Mark VII uranium fuel elements.¹⁸ As of April 1958, the AEC estimated that Contract 1293 work constituted 85 to

⁹ Tab 6. Memo to Files, re Meeting At NYOO Re Sylvania, dated November 21, 1955 at 1.

¹⁰ Tab 7. Modification No. 12, Supplemental Agreement to Contract No. AT(30-1)-1293, dated November 1, 1955.

¹¹ See Tab 8. Sponsored Task No. CH-4, Modification No. 1, Contract AT(30-1)-1293, Appendix “C”, Work Under Paragraph 2 of Article I, dated September 11, 1959; Tab 9. Memo from L. D. MacKay to James J. Wise, re Sylvania-Corning Nuclear Contract AT(30-1)-1293 Appendix “C” Agreement, dated July 23, 1959.

¹² Tab 10. Memo from R. C. Blair re Placing Work Under Contract No. AT(30-1)-1293 With Sylvania Electric Products, Inc. At The Hicksville Plant, dated January 23, 1956.

¹³ Tab 11. Sponsored Task No. CH-4, Modification No. 12, Contract AT(30-1)-1293, Appendix “C”, Work Under Paragraph 2 of Article I, dated December 19, 1962.

¹⁴ Tab 12. Renewal Application of SNM 82 License for Sylcor Division, Sylvania Electric Products, Inc., dated September 28, 1964, at 14.

¹⁵ *Id.* at 18.

¹⁶ Tab 13. Letter from H. Grieb to H. Watts, dated February 2, 1960, re AEC Fuel Waste Water (p. 2, bottom) (reference to use of the “Commercial Sump”).

¹⁷ Tab 14. Letter from D.B. Metz to Ernest B. Tremmel re capabilities of Sylcor Division, dated March 16, 1964, at 2.

¹⁸ Tab 15. Summary of Contract No. AT(30-1)-1293, Savannah River Operations Office, dated February 21, 1957.

90 percent of Sylvania's work at the Hicksville Facility.¹⁹

The government supplied Sylvania with the natural and enriched uranium and (later thorium) used in the Hicksville Facility's contract operations. The AEC retained title to the "products, by-products, wastage, salvage, work-in-process, residues and scrap resulting from" these fuel elements.²⁰

The government also owned the chlorinated solvents used in Sylvania's Contract 1293 operations, as it owned all supplies that Sylvania purchased for Contract 1293 work.²¹ The AEC also owned at least two chlorinated solvent vapor degreasers for use in Hicksville's contract operations.²² Most notably, Sylvania used the chlorinated solvent perchloroethylene ("PCE") in its Contract 1293 fuel fabrication.²³ Indeed, an entire building on the site was dedicated to storage of oil and solvents.²⁴

Surviving records show that Sylvania was producing *tens of tons* of fuel elements *every month* under Contract 1293.²⁵ Inspection reports show that Sylvania operated the Hicksville Facility in a safe, careful manner under the strict regulatory supervision of the AEC.²⁶ As one report put it, "[t]he gratifying results found in this survey can be attributed to the health and safe

¹⁹ Tab 16. Memo from R.C. Blair to R.E. Hollingsworth re Sylvania-Corning Nuclear Corporation, Extension of Statutory Indemnification To, dated April 4, 1958, at 2.

²⁰ Tab 17. Contract AT(30-1)-1293 between Sylvania Electric Products Inc. and the United States Atomic Energy Commission, dated March 10, 1953 (effective date December 10, 1951) at 15-16.

²¹ *Id.*

²² Tab 18. Sylcor Division, Sylvania Electric Products Inc., Cantiague Road, P.O. Box 35, Hicksville, New York (list of equipment to be returned to the AEC under Contract 1293), at 7, 12.

²³ Tab 19. Sylvania Electric Products, Inc., Hicksville Pilot Plant, Occupational Exposure to Radioactive Dust, by Industrial Hygiene Branch Health and Safety Division, dated September 28, 1953, at 5.

²⁴ Tab 12. Renewal Application of SNM 82 License for Sylcor Division, Sylvania Electric Products, Inc., dated September 28, 1964, at 14.

²⁵ Tab 20. Letter from R. C. Blair to D. B. Metz, re Modification No. 29 Appendix "B", dated January 12, 1962; Tab 21. Memo from A.Y. Morgan to J.S. Hopkins re Review Of Sylcor's Proposal P-63-4 Dated May 28, 1963, dated June 14, 1963; Tab 22. Memo from A.Y. Morgan to J. S. Hopkins, re Review Of Sylcor Proposal P-64-6, dated June 20, 1964; Tab 23. Memo from A.Y. Morgan to J.S Hopkins re Review Sylcor Proposal P-65-2 (Revised), dated January 20, 1965.

²⁶ *See. e.g.*, Tab 24. AEC Occupational Exposure to Airborne Contaminants Report: Sylvania Electric Products, Inc., Hicksville Pilot Plant, dated November 24, 1954; Tab 25. AEC Occupational Exposure to Airborne Contaminants Report: Sylvania Electric Products, Inc., Hicksville Pilot Plant, dated June 30, 1955; Tab 26. AEC Site Inspection Report: Sylvania Corning Nuclear Corp., Cantiague Road, Hicksville, New York, dated June 11, 1959.

mindedness of the [Sylvania] managerial and operating personnel.”²⁷

1959-1966: Operation of Sylvania’s Licensed Facility

In late 1956, the AEC issued Sylvania a license to possess at the Hicksville site a small amount of “special nuclear material” (*i.e.*, enriched uranium) to allow Sylvania to perform nuclear-related work outside of its 1293 Contract.²⁸ Also in 1956, the AEC issued a source material license to Sylvania for use at Hicksville.²⁹ Sylvania built a new 25,000 square foot building (referred to as Building 4) for its licensed operations that was operational by early 1959.³⁰

Production for Sylvania’s licensed work took place mainly in Building 4, which was located on the 70 Property.³¹ Some special melting operations, however, took place in one segregated room in Building 2.³² The licensed operation also used Building 10 (for storage) and Building 12 (for isostatic pressing).³³

In contrast to Sylvania’s contract operations, the amount of licensed work done at the Hicksville Facility was very modest regardless of whether it is measured by the number of fuel elements or by weight. While the contract operations’ monthly output of fuel elements was measured in the tens of thousands, the licensed facility’s monthly output was measured usually in the hundreds, and sometimes only in the tens, of elements.³⁴ For example, a March 1960

²⁷ Tab 25. AEC Occupational Exposure to Airborne Contaminants Report: Sylvania Electric Products, Inc., Hicksville Pilot Plant, dated June 30, 1955, at 4.

²⁸ Tab 27. Letter from Garth W. Edwards to Lyall Johnson re Special Nuclear Material License, dated March 25, 1957.

²⁹ Tab 28. Letter from James McTavish to Lyall Johnson re Source Material License No. C-3416, dated March 13, 1957.

³⁰ The date that construction was complete is unknown. Documents suggest it was between September 1958 and June 1959. For example, an AEC inspection report dated September 5, 1958 noted that the licensed building was “now nearing completion . . .” (Tab 29. Letter from M. Mann, AEC, to H. Price, AEC re Sylvania-Corning Nuclear Corporation – License Nos. SNM 141 and SNM 82, dated September 9, 1958); while an inspection performed by NY State in June 1959 noted that the new facility was already operational. (Tab 30. Division of Industrial Hygiene Inspection Report, dated June 11, 1959, at 1).

³¹ Tab 31. “Appendix” to Application for Renewal of Sylcor’s SNM-82 Special Nuclear Material License, dated February 15, 1963 at 3; Tab 12. Renewal Application of SNM 82 License for Sylcor Division, Sylvania Electric Products, Inc., dated September 28, 1964, at 13-18.

³² *Id.*

³³ *Id.*

³⁴ See Tab 32. Memo from L.L. Davenport to G.W. Edwards, et. al. re Operations Report — February 29, 1960, (“Operations Report”) dated March 1, 1960 at 2; Tab 33. Memo from Robert W. Kirkman, Director,

Sylvania operations report noted that the licensed facility could only produce 130 fuel elements per month.³⁵ It appears that the licensed facility produced a total of only about 12,000 fuel elements over eight years.³⁶

The results are the same if measured by weight. Based upon the materials that we have been able to review, the throughput of materials under the AEC licenses was about six tons in eight years, while the throughput of materials under Contract 1293 was measured in the tens of tons *per month*. Accordingly, the percentage of work conducted under Contract 1293 appears to have easily exceeded 90% of the total work conducted at the site.

But even the 90% figure is very conservative when calculating Sylvania's early atomic energy work, because much of Sylvania's licensed work at Hicksville was also in support of early atomic energy activities as it involved:

1. Prime contracts with the AEC's New York Operations Office (NYOO) and Savannah River Operations Office (SROO) to produce nuclear fuel for the AEC itself;
2. Prime contracts with the AEC to provide nuclear fuel for other federal agencies;
3. Sylvania acting as the AEC's agent to fabricate and export nuclear fuel to foreign countries;
4. Providing nuclear fuel to U.S. research reactors sponsored by the AEC; and
5. Subcontracts to private companies and the AEC's national laboratories acting in their capacity as AEC prime contractors.

Sylvania's licensed work for the AEC included production of nuclear fuel for use by the AEC.³⁷ This included work under numerous prime contracts with the AEC including contracts

Compliance Division, NYOO to Robert Lowenstein, Acting Director, Division of Licensing and Regulation re Transmittal of License Compliance Inspection Report - 10 CFR 40 and 70, dated May 4, 1961, at 9.

³⁵ Tab 32. Operations Report, dated March 1, 1960, at 2.

³⁶ Tab 14. Letter from D.B. Metz to Ernest B. Tremmel re capabilities of Sylcor Division, dated March 16, 1964, at 2.

³⁷ For example, an AEC SNM-82 inspection dated May 1, 1963 notes that high enriched material was shipped from AEC Oak Ridge for use by the licensee on "AEC contract jobs." Tab 34. Letter from R. Chitwood (AEC), to L. Dubinski (AEC) re April 17 and 18, 1964 Inspection, dated May 1, 1963 App. B; *see also* Tab 34. Letter from G. LaPier, Sylvania, to E. Price re Prior Inspection, dated January 21, 1966, p. 2 ("the threshold detectors are the property of the New York Operations Office of the A.E.C. We were instructed to hang them in the plant years ago because we were processing enriched uranium under a contract with the New York Office. We still have an active contract with the New York Office."); The 1962 SNM-82 License Application also states that uranium under license will be, among other things, "for transfer to the United States Atomic

AT(30-1) 3303,³⁸ AT(30-1) 3112,³⁹ AT(30-1) 3065,⁴⁰ and AT(30-1) 2370.⁴¹ These contracts involved the fabrication of multiple nuclear cores, fuel elements, and fuel rods for the AEC using both natural and enriched uranium.⁴²

Sylvania was also an AEC prime contractor providing nuclear fuel to other federal agencies over the entire life of licensed operations. For example, the AEC developed nuclear powered rockets for aerospace programs in cooperation with the National Aeronautics and Space Administration (NASA).⁴³ As early as 1960, Sylvania was fabricating fuel elements under a prime contract with the AEC for NASA, and shipping them under its AEC license.⁴⁴ This work continued for six years until the licensed operations ceased in 1966.⁴⁵

The AEC also contracted with Sylvania for entire "PM-3" nuclear cores for the U.S. Navy's McMurdo reactor in Antarctica, and the U.S. Air Force's Sundance reactor in Wyoming.⁴⁶ This work spanned from 1961 through 1966 and while such work was minor

Energy Commission or its contractors." Tab 36. 1962 SNM 82 Application, dated January 15, 1962, p. I-A-(1-2).

³⁸ Tab 37. Sylvania Job Order Log (42 fuel elements pp. 20, 22).

³⁹ Tab 37. Sylvania Job Order Log (46 rods p. 16).

⁴⁰ Tab 37. Sylvania Job Order Log (20 rods and 33 elements pp. 13, 14).

⁴¹ Tab 33. Memo from R. Kirkman to R. Lowenstein, dated May 4, 1961, re Transmittal of License Compliance Inspection Report- 10 CFR 40 and 70 (p. 11) (noting 11.2 kgs. of natural uranium and 10.5 kgs of U-235 stored for use in Contract AT(30-1) 2370).

⁴² See four previous footnotes.

⁴³ Tab 38. AEC Annual Report to Congress, 1961, pp.65-74 ("Development of nuclear energy utilization for aerospace programs is being carried on by the Commission under two programs and in cooperation with other Government agencies. The Systems for Nuclear Auxiliary Power (SNAP) program already proved successful with the orbiting, during 1961, of two TRANSIT navigational satellites each carrying radioisotope-fueled "batteries" which provide power for the satellites' radio transmitters. The second project is that involving nuclear propelled rockets, Project ROVER which is carried on in cooperation with [NASA] . . . ") (emphasis added).

⁴⁴ Tab 39. Letter from G. Edwards, Sylvania, to L. Johnson, re License SNM-82 and transmitting License Amendment Request, dated January 19, 1960, p. 1 ("shipment of completed fuel elements to the National Aeronautics and Space Agency"), p. IV.A.11 ("Finished NASA fuel elements to contain a maximum of 168 grams of U-235 per element . . . Each shipping container will be packed with up to six elements . . . A shipment may contain five such shipping containers, constituting a maximum of 5,040 grams of U-235 in total").

⁴⁵ Tab 32. March 1, 1960 Operations Report, p. 2; Tab 37. Sylvania Job Order Log pp. 15, 20, 25, and 26.

⁴⁶ Tab 40. Sept. 1, 1965 - Sylvania News Release- announcing "completion of first core as part of \$1.4 million A.E.C. contract for the U.S. Navy, McMurdo Sound Antarctica the company's first fueling of a power reactor."

compared to the activity level on the 100 and 140 properties, it appears to have occupied a significant amount of the total output of the 70 Property.⁴⁷ By early 1966, Sylvania had shipped approximately 1,700 PM-3 fuel elements for the AEC.⁴⁸ The AEC contract for the PM-3 reactor cores was valued at \$1.4 million.⁴⁹

Sylvania also acted as the AEC's agent to fabricate and export some nuclear fuel to foreign countries. Export of nuclear materials was tightly controlled by the AEC. Export-control documents clearly show that Sylvania acted solely as the AEC's agent for these exports.⁵⁰ And the Sylvania Job Order Log shows that the following eleven countries received nuclear fuel or other nuclear components fabricated at Hicksville: Australia, Austria, Belgium, France, Holland, Israel, Italy, Pakistan, South Africa, Sweden, and the then West Germany.⁵¹ This work resulted in Sylvania, as the AEC's agent, supporting the AEC's efforts to expand the peaceful use of nuclear power.

Finally, Sylvania fabricated nuclear fuel for domestic research reactors under the AEC's Educational Assistance Program.⁵² This included work for the research reactors at North Carolina State University, University of Michigan, University of California, University of Missouri, McMaster University (Canada), Manhattan College, and Columbia University.⁵³

In addition to the work done directly for the AEC, early atomic energy activities conducted under license by Sylvania also included subcontract work for private companies and

(p. 1 emphasis added); *See also* Tab 41. Letter from J. Grano, Sylvania, to I. Adler, AEC, dated June 8, 1965, re USAEC Contract AT(30-1) 3183, Sycolor Project #3437, PM-3 Project – Fuel Loading.

⁴⁷ Tab 42. Letter from R. Kirkman, AEC, To W. Mandaro, Sylvania, dated March 5, 1965, Transmitting February 18, 1965 Inspection results, "Details", p. 1 ("Maximum production capacity of the plant is being required for the production of Advanced Test Reactor (ATR) and Portable Martin (PM-3) fuel elements"); Tab 43. August 2 and 3, 1965 Inspection Report "Details", p. 3 ("The fuel elements currently being processed by Sycolor are as follows: A. PM-3 cores for the Sundance and McMurdo reactors").

⁴⁸ Tab 43. August 2 and 3, 1965 Inspection Report "Details," p. 3 ("PM3 tubes which will be shipped as two cores with an extra bundle assembly (the cores are made from six bundles)", p. 4 ("each bundle contains 129 fuel elements . . .").

⁴⁹ Tab 40. Sept. 1, 1965 – Sylvania News Release.

⁵⁰ *See e.g.*, Tab 44. Shippers Export Control Declaration.

⁵¹ Tab 37. *See generally* Tab 37. Sylvania Job Order Log.

⁵² Tab 45. Letter from G. Edwards, Sylvania, to L. Johnson, AEC, dated March 2, 1959.

⁵³ *Id.* (North Carolina State University); Tab 32. March 1, 1960 Operations Report, p. 2 (University of Michigan); Tab 37. Sylvania Job Order Log (the remainder).

the AEC's national laboratories acting in their capacity as AEC prime contractors.⁵⁴ These private companies included Alcoa Products, Phillips Petroleum, and Union Carbide. Sylvania was a subcontractor to Alcoa Products for Alcoa's AEC prime contract to produce nuclear fuel for the U.S. Department of the Army's Power Package Reactor (APPR).⁵⁵ During production in 1960, Sylvania's work for the APPR alone occupied about 20% of the 70 Property's output.⁵⁶

Sylvania was also a subcontractor to Phillips Petroleum for Phillip's prime contract to operate the AEC's Idaho Falls facility.⁵⁷ Sylvania supplied Phillips Petroleum with nuclear fuel for three of the AEC's reactors at Idaho Falls: the Material Test Reactor (MTR), the Experimental Test Reactor (ETR), and the Advanced Test Reactor (ATR).⁵⁸ At the time that the AEC negotiated the subcontract between Sylvania and Phillips Petroleum in 1960, Sylvania predicted that this work would constitute nearly 80% of the 70 Property work in 1961.⁵⁹ This work appears to have continued over the next five years. In 1965, the maximum production capacity of the 70 Property, which was substantially lower than the 100 and 140 Properties, was being required to produce nuclear fuel for the ATR and the PM-3 (discussed above).⁶⁰

⁵⁴ The 1962 SNM-82 License Application states that uranium under license will be, among other things, "for transfer to the United States Atomic Energy Commission or its contractors." Tab 36. 1962 SNM 82 Application, dated January 15, 1962, p. I-A-(1-2).

⁵⁵ Tab 46. AEC Semi-Annual Report, January 1959, p. 187 ("The Commission entered into a contract with Alco products to design and develop a higher power core of the APPR-1 type"). Tab 47. Letter from G. Edwards, Sylvania, to L. Johnson, AEC, dated October 17, 1958 ("This modification is requested primarily to enable us to fabricate APPR fuel elements for which we have a subcontract from Alco Products Inc."); Tab 32. March 1, 1960 Operations Report, p. 2 ("28 APPR 1A elements").

⁵⁶ For example, in March 1960, 28 APPR fuel elements were produced, or approximately 21% of that month's production of 129 elements. Tab 32. March 1, 1960 Operations Report, p. 2

⁵⁷ Prime Contractor List available at: <http://www.inl.gov/proving-the-principle/appendices.pdf>.

⁵⁸ Tab 37. Sylvania Job Order Log references MTR, ETR, and ATR fuel being shipped to Phillips Petroleum at Idaho Falls; Tab 48. 1965 AEC Annual Report, p. 179 (listing ATR reactor at Idaho Falls); See History of Idaho Falls site showing MTR, ETR, and ATR reactors available at: <http://www.inl.gov/proving-the-principle/appendices.pdf>.

⁵⁹ Tab 49. December 20, 1960, Sylvania-Corning Board of Directors Meeting Minutes, p. 3 ("[Dr. Davenport] indicated that although no contract [with Phillips Petroleum] had as yet been awarded, Sylcor is the low bidder and the government has indicated it wishes to negotiate." (emphasis added)); In December 1960, Sylvania projected that 80% of its 1961 work would be for Philips Petroleum. *Id.*

⁶⁰ Tab 42. Letter from R. Kirkman, AEC, To W. Mandaro, Sylvania, dated March 5, 1965, Transmitting February 18, 1965 Inspection results, "Details", p. 1.

Sylvania also subcontracted to Union Carbide for an AEC prime contract with the AEC's Oak Ridge Operations Office.⁶¹ Sylvania fabricated 375 fuel assemblies under license for this subcontract.⁶²

Finally, the Sylvania Job Log shows that Sylvania did licensed nuclear work for many of the AEC's (now DOE's) national laboratories including Ames Laboratory, Argonne National Laboratory, Battelle Laboratory, and Brookhaven National Laboratory. This work included about 2700 elements and 68 plates.⁶³

Inspection reports show that Sylvania operated the licensed operations in a safe manner under strict supervision.⁶⁴ As the AEC inspectors noted, "the apparent safety of current operations at Hicksville compares very favorably with the better-regulated and safety-conscious fuel fabrication facilities we have seen."⁶⁵ The AEC renewed Sylvania's license until the facility ceased operations.

1965-1966: "Decontamination" Of The Contract Facility

In early 1965, the AEC decided to terminate Contract 1293.⁶⁶ In September 1965, the AEC informed Sylvania that it was setting standards for decontaminating the site to a level where it was fit for unrestricted use,⁶⁷ which were eventually written into Sylvania's contract.⁶⁸ (Although the AEC set standards for surface decontamination, it did not set decontamination standards for soil or for beta or gamma radiation at the contract operations of the Hicksville Facility.)

Under Contract 1293, decommissioning costs were allowable costs which were

⁶¹ Tab 37. Sylvania Job Order Log, p. 15.

⁶² *Id.*

⁶³ See generally Tab 37. Sylvania Job Order Log.

⁶⁴ *See. e.g.*, Tab 33. Memo from Robert W. Kirkman, Director, Compliance Division, NYOO to Robert Lowenstein, Acting Director, Division of Licensing and Regulation re Transmittal of License Compliance Inspection Report - 10 CFR 40 and 70, dated May 4, 1961.

⁶⁵ *Id.* at 4.

⁶⁶ *See* Tab 50. Letter from R.E. Hollingsworth to John T. Conway re termination of Contract 1293, dated May 17, 1965.

⁶⁷ Tab 51. Telex from R.C. Blair to W. Mandaro re decontamination of Hicksville facility, dated September 1, 1965; *see also* Tab 52. Memo from Alex F. Perge to P.J. Hagelston re Surface Contamination Control Criteria for Unconditional Release of Contaminated Property, dated August 2, 1965.

⁶⁸ Tab 53. Modification No. 42, Supplemental Agreement to Contract AT(30-1)-1293, dated December 15, 1965 (effective as of October 1, 1965).

reimbursed by the AEC.⁶⁹ Sylvania subcontracted the decontamination work to Isotopes, Inc., a private contractor. Isotopes conducted radiation surveys of Buildings 1, 2, 7, and 8 and either decontaminated the surfaces of those buildings and the equipment inside within acceptable limits or removed them for off-site disposal.⁷⁰ Isotopes also surveyed the concrete, asphalt, and soil surrounding the Contract 1293 buildings.⁷¹ Isotopes identified high levels of radiation on the grounds. In particular, Isotopes noted that soil in some areas "indicated heavy soil contamination."⁷² Based on this finding, Isotopes removed four inches of topsoil from limited areas of the grounds for off-site disposal.⁷³

In January 1966, Isotopes presented Sylvania and the AEC with a report that included a Certificate of Decontamination.⁷⁴ Based on the Isotopes report, in February 1966, New York State declared that "the former AEC Facilities at the above address is [sic] hereby declared fit for use as other than a radiation installation and you are hereby deemed to have complied with Industrial Code Rule 38-29."⁷⁵ Excluded from this declaration were any portions of the contract site utilized by the licensed operations.⁷⁶

In April 1966, the AEC sent its own inspector to conduct a limited survey of the Contract 1293 area to confirm that it had been adequately decontaminated by Isotopes.⁷⁷ The inspector's first survey readings indicated radioactivity above the surface standards set by the AEC. In response, the AEC made at least 200 separate survey measurements of the contract buildings. The AEC inspector directed Isotopes to perform additional decontamination work in the affected areas of the building. The AEC also arranged for an additional inspection later in the month. But there is no evidence that the AEC actually conducted additional soil surveys.

⁶⁹ Tab 54. Memo from A.Y. Morgan to J.S. Hopkins re Revised Sylcor Proposals P-65-3 and P-66-2, dated September 20, 1965 at 2.

⁷⁰ Tab 55. Report by F.J. Bradley, Ph.D., Isotopes, Inc. re Decontamination of Sylcor 1293 Area Hicksville, Long Island, New York, dated January 3, 1966.

⁷¹ *Id.* at 5-9.

⁷² *Id.* at 8; *see also id.* at 8-9, A-I-7, A-I-33.

⁷³ *Id.* at 8-9.

⁷⁴ *Id.*

⁷⁵ Tab 56. Letter from Morris Kleinfeld, M.D. to Henry Grieb re decontamination of Hicksville facility, dated February 1, 1966.

⁷⁶ *Id.*

⁷⁷ Tab 57. Memo from K.E. Herde to P.J. Hagelston re Arrangements for Radiological Monitoring and Consultation at Sylcor, dated April 4, 1966; Tab 58. Memo from K.E. Herde to P.J. Hagelston re Levels of Contamination Observed at Sylcor, dated April 12, 1966.

In May 1966, the AEC concluded that "the buildings are now clean and within acceptable radioactivity limits."⁷⁸ In June 1966, the AEC told Sylvania that the contract portion of the Hicksville Facility was fully decontaminated.⁷⁹ In reliance on the AEC's representation that the "buildings and surrounding grounds" were safe for "normal use," Sylvania executed a Final Release and General Assignment for Contract 1293.⁸⁰ In March 1967, Sylvania sold the property that had housed its contract operations.⁸¹

1966-1967: "Decontamination" Of The Licensed Facility

In April 1966, the AEC set decontamination levels for the licensed portion of the Hicksville Facility.⁸² (Unlike the AEC standards for the contract operations, the AEC standards for the licensed operations also included beta-gamma radiation.⁸³ But, as with the contract operations, there is no evidence that the AEC set any standards for decontamination of soil on the grounds of the licensed operations.)

In October 1966, Sylvania hired a private contractor, Atcor, Inc., to decontaminate the remaining licensed portion of the site.⁸⁴ In January 1967, Atcor performed the decontamination and issued a report on its work to Sylvania and the AEC.⁸⁵

Over the next two months, the AEC and New York State jointly inspected the site.⁸⁶ In early February 1967, New York State declared that "building #4 of your former commercial

⁷⁸ Tab 59. Memo from P.J. Hagelston to J.S. Hopkins re Approval of Release of Sylcor Buildings for Unlimited Use or Sale, dated May 5, 1966.

⁷⁹ Tab 60. Telex from N. Stetson to W.R. Mandaro re release of Hicksville facility, dated June 29, 1966.

⁸⁰ *Id.*; Tab 61. Final Release, Contract No. AT(30-1)-1293, dated June 29, 1966; Tab 62. General Assignment Between Sylvania Electric Products Inc. and the United States Atomic Energy Commission re Contract No. AT(30-1)-1293, dated June 29, 1966.

⁸¹ Tab 63. Chain of Title to Tax Lots 94, 99, 100 and 105, T/O Oyster Bay, dated November 4, 1996 at 1.

⁸² Tab 64. Survey Report of Atomic Energy Commission re Sylvania Electric Products, Inc., Sylcor Division, Hicksville, New York, License No: SNM-82, dated January 25 and February 21, 1967, at 3.

⁸³ *Id.*

⁸⁴ *See* Tab 65. Letter from John D. Murphy to H.E. Watts re #3-168 Proposal for the Decontamination of Building #4 at the Hicksville Site, dated October 24, 1966.

⁸⁵ Tab 66. Letter from Joseph L. Schwinger to H. Watts re attached report, dated January 19, 1967 attaching Report of Atcor, Inc. re Decontamination of Building #4, Hicksville, Long Island, New York Performed by Atcor, Inc., dated January 13, 1967.

⁸⁶ Tab 64. Survey Report of Atomic Energy Commission re Sylvania Electric Products, Inc., Sylcor Division, Hicksville, New York, License No: SNM-82, dated January 25 and February 21, 1967; Tab 67. Letter from Henry E. Grieb to Donald A. Nussbaumer re decontamination of Hicksville facility, dated April 18, 1967.

facility is hereby released and declared fit for non-radioactive use and you are hereby deemed to have complied with Industrial Code Rule 38-29.”⁸⁷ This release excluded one sump — “pending the further analysis of soil samples” — and a few rooms of Building 2 — pending “further decontamination and subsequent surveys.”⁸⁸ Later that same month, following a second inspection by the AEC and New York State, New York State declared that the remaining portions of the site, “which were excluded in our prior release are hereby found to be fit for non-radioactive use and to have complied with New York State Industrial Code Rule 38-29.”⁸⁹

In April 1967, the AEC determined that the entire facility was now fully decontaminated.⁹⁰ At Sylvania’s request, the AEC removed Hicksville from Sylvania’s Special Nuclear Material License, finding that “we have concluded that, due to the insignificance of the contamination which might be present in this particular instance, no hazard to health and safety is involved and no license would be required for any persons possessing or occupying the Hicksville, New York facilities.”⁹¹

During August 1967, at the request of New York State, Atcor took additional soil samples from a sump on the site of the licensed operations and reported that all concentrations were less than 0.05 percent uranium.⁹² In September 1967, based on these samples New York State reaffirmed its previous findings that “your property on Cantiague Road in Hicksville is hereby deemed fit for non-radioactive use.”⁹³ The State then cancelled Sylvania’s registrations relating to the Hicksville Facility.⁹⁴

Sylvania did not use nuclear materials at the site again. Sylvania is not aware of any other operations that used nuclear materials on the site before 1952 or after 1967. The company owned the site of its former licensed operations for another five years. It used part of the

⁸⁷ Tab 68. Letter from Morris Kleinfeld, M.D. to Herbert Watts re decontamination of commercial facility, dated February 17, 1967.

⁸⁸ *Id.*

⁸⁹ Tab 69. Letter from Morris Kleinfeld, M.D. to Herbert Watts re decontamination of Hicksville facility, dated February 28, 1967.

⁹⁰ Tab 70. Letter from Donald A. Nussbaumer to Jerold B. Kreischer re SNM-82, dated April 28, 1967.

⁹¹ *Id.*

⁹² Tab 71. Letter from Stanley F. Wisla to H.E. Watts re soil samples, dated August 7, 1967; Tab 72. Letter from Herbert Watts to Allan Jones re soil samples, dated August 11, 1967.

⁹³ Tab 73. Letter from Morris Kleinfeld, M.D. to Herbert Watts re decontamination of commercial facility, dated September 19, 1967.

⁹⁴ *Id.*

property itself as a laboratory that performed metallurgical coating work,⁹⁵ and leased another portion of the property to a commercial tenant.⁹⁶ In August 1972, Sylvania sold the property to Dewiant Corporation.⁹⁷

1973: AEC Finds That "Cleanup Is Considered Adequate"

In October 1973, the AEC's Division of Waste Management ("DWM") asked the AEC's operations offices to identify all former contract facilities under their control and to state whether these sites had been adequately decontaminated.⁹⁸

The next month, the SROO responded that the former Hicksville Facility was the only decommissioned site within its jurisdiction and that "cleanup is considered adequate and no further action is planned."⁹⁹ As evidence, the SROO referred the DWM to a memorandum it had submitted to the AEC's Division of Operational Safety earlier in the year.¹⁰⁰ In that memo, the SROO had provided a summary of the decontamination process, and provided documentary evidence of the cleanup.¹⁰¹

1979: DOE Ignores Contamination That "May Be Of Some Concern"

In early 1979, at the request of New York State's Department of Environmental Conservation, the DOE — which had at this point assumed responsibility for the now-defunct AEC's contracts — dispatched a Radiological Assistance Program ("RAP") team to inspect the

⁹⁵ See Tab 74. Memo from H.C.F. Anderson re Hicksville Shop, dated August 17, 1966; Tab 75. New York State Department of Environmental Conservation Voluntary Cleanup Program Application, Past Owners and Operators, dated March 20, 1997 at 9.

⁹⁶ Tab 75. New York State Department of Environmental Conservation Voluntary Cleanup Program Application, Past Owners and Operators, dated March 20, 1997 at 9; Tab 76. Lease Agreement between Sylvania Electric Products Inc. as Landlord and PRD Electronics, Inc. as Tenant, January 15, 1968 at 42-43; Tab 77. Agreement between Sylvania Electric Products and PRD Electronics, dated July 27, 1970 at 36-37.

⁹⁷ Tab 63. Chain of Title to Tax Lots 94, 99, 100 and 105, T/O Oyster Bay, dated November 4, 1996 at 3; Tab 78. Purchase and Sale Agreement between GTE Sylvania Incorporated and Dewiant Corporation, dated August 25, 1972.

⁹⁸ Tab 79. Telex from Frank K. Pittman to USAEC, Managers of Field Offices re decontamination and decommissioning of AEC facilities, dated October 29, 1973.

⁹⁹ Tab 80. Memo from N. Stetson to Frank K. Pittman re Decontamination and Decommissioning of AEC Facilities (Your TWX, 10/29/73), dated November 13, 1973.

¹⁰⁰ *Id.*

¹⁰¹ Tab 81. Memo from G.H. Giboney to L. Joe Deal re Radiological Cleanup and Site Disposal Actions, dated May 2, 1973.

site of the former Hicksville Facility.¹⁰²

The DOE's inspection found contamination in surface and subsurface soil on the site of the former Hicksville Facility's contract operations ranging from 38 to 1,362 picocuries per gram.¹⁰³ The concentration of the uranium found at the site by the DOE was approximately *eight times* greater than that for which an NRC license was required in 1979.

Based on these results, the RAP team informed DOE headquarters that "*the levels found at this site may be of some concern.*"¹⁰⁴ Apparently, the DOE took no direct action.

1980s: DOE Eliminates Hicksville From FUSRAP Consideration

In the 1980s, the DOE, acting through its Formerly Utilized Sites Remedial Action Program ("FUSRAP"), again addressed the question of whether the former Hicksville Facility was currently contaminated. By late 1987, the facility appeared on a list of sites that had been "eliminated from FUSRAP consideration."¹⁰⁵ Under "status," the DOE noted that "This site conducted AEC and licensed work. Any action on the site is under the authority of the NRC."¹⁰⁶

The DOE apparently reached this conclusion based on the false premise that the contract operations at Hicksville had been adequately decontaminated. In 2001, the DOE would inform Rep. Peter King — the Congressman whose district currently includes Hicksville — that Hicksville "was not included in FUSRAP because, as previously noted, the portion of the site involved in AEC work was determined to have been decontaminated and decommissioned and released back to Sylvania for 'unconditional' use."¹⁰⁷ But the reality is that the site remained contaminated.

¹⁰² Tab 82. Memo from L. Phillips to R. Friess re Possible Contamination of Old Sylvania Site in Hicksville, dated May 21, 1979; Tab 83. Letter from David Schreller to William E. Mott re Prior AEC Site, dated May 24, 1979.

¹⁰³ Tab 84. Letter from William E. Mott to Richard E. Cunningham re radiological survey report, dated June 25, 1979 (misdated June 25, 1978).

¹⁰⁴ Tab 83. Letter from David Schreller to William E. Mott re Prior AEC Site, dated May 24, 1979.

¹⁰⁵ Tab 85. Sites Eliminated from FUSRAP Consideration as of December 31, 1987, dated December 21, 1987.

¹⁰⁶ *Id.*

¹⁰⁷ Tab 86. Letter from Spencer Abraham to Peter King re Sylvania Corning Nuclear Corporation Plant, dated June 11, 2001.

1994: DOE Concludes That The Site Is Contaminated

In June 1994, DOE's Oak Ridge National Laboratory conducted a review of the former Hicksville Facility on behalf of the NRC, as part of the NRC's review of all retired licenses in the United States.¹⁰⁸ Specifically, ORNL looked at records of the decontamination of the licensed operations conducted in 1967.¹⁰⁹

After reviewing the records, ORNL concluded that uranium concentrations in soil taken at the licensed operations during the decontamination process were "3,000-25,000 times greater than naturally occurring uranium concentrations reported by NCRP, and there is no indication that surveys or soil analyses were performed in the vicinity of storm or floor drains."¹¹⁰

1995: DOE Concludes That Additional Investigations Are "Unnecessary"

In January 1995 — despite its own laboratory's conclusion six months earlier that the site was contaminated — the DOE wrote a letter to Lewis Yevoli, the Supervisor of the township of Oyster Bay, New York, saying that the Hicksville Facility complied with all applicable health and safety requirements.¹¹¹ In this letter, the DOE acknowledged that the site "performed work for DOE predecessor agencies."¹¹² And it informed the township that "we are pleased to reaffirm our determination that conditions at this site meet applicable requirements for protection of public health" and that "additional investigations of this site are unnecessary."¹¹³

It appears that the DOE reached this conclusion by looking at the wrong file. The DOE's Considered Sites Database — which lists all sites considered for inclusion in the FUSRAP program — includes two sites operated by Sylvania during the Cold War.¹¹⁴ The first is the Hicksville Facility, named in the Database as "Sylvania Corning Plant" and designated as site "NY.19."¹¹⁵ The second, concerning a facility operated by Sylvania in Bayside, Queens in New York City, is named in the database as "Sylvania-Corning Nuclear Corp., Inc.,"

¹⁰⁸ Tab 87. Retired License Review of License SNM-82, signed by James S. Bogard, dated June 13, 1994.

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ Tab 88. Letter from James W. Wagoner II to Lewis Yevoli re former Sylvania-Corning Plant site, with enclosures, dated January 23, 1995.

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ See Department of Energy's Considered Sites Database, <http://csd.gjo.doe.gov/>.

¹¹⁵ Tab 89. FUSRAP Considered Sites Database Report, NY.19.

Sylvania-Laboratories” and designated as site “NY.07.”¹¹⁶

The January 1995 letter sent by the DOE to Supervisor Yevoli references the name of the Hicksville Facility — “Sylvania-Corning Plant” — but encloses documents relating to the Department’s inspection of the Bayside facility.¹¹⁷ Further, the copy of this letter Sylvania obtained from the DOE’s files contains a handwritten notation listing the site number for the Bayside facility — NY.07.¹¹⁸ This strongly indicates that the DOE concluded that the Hicksville Facility had been properly decontaminated by looking at records for the Bayside facility.

1996: Contamination Found At Hicksville

In December 1995, the NRC again reviewed both the decontamination records of 1967 and also the DOE inspection of 1979.¹¹⁹ It determined that “[t]he DOE and AEC surveys show that uranium and thorium soil contamination existed as late as 1979. This is the main concern with this file unless it can be shown that the site was remediated after 1979.”¹²⁰ The NRC recommended informing the New York State authorities of its analysis.¹²¹

In August 1996, the NRC conducted its own soil and groundwater radiation surveys of the Hicksville Facility’s former 1293 Contract operations.¹²² These surveys showed that “[r]adiological exposure rates in excess of the NRC criteria for release for unrestricted use were identified on the eastern edge of the former Sylvania property” — specifically, on the former site of the Contract 1293 operations.¹²³ The NRC also concluded that “[a] sample of groundwater ... indicated gross alpha activity in excess of the criteria used by the NRC for release for unrestricted use.”¹²⁴ In sum, these tests confirmed the ORNL’s previous conclusions of June 1994 and December 1995 — that the site was contaminated.

¹¹⁶ Tab 90. FUSRAP Considered Sites Database Report, NY.07.

¹¹⁷ Tab 88. Letter from James W. Wagoner II to Lewis Yevoli re former Sylvania-Corning Plant site, with enclosures, dated January 23, 1995.

¹¹⁸ *Id.*

¹¹⁹ Tab 91. License No. SNM-82, Review of the Termination and Confirmatory Surveys for Sylvania Electric Products, Hicksville, New York Site, dated December 1, 1995.

¹²⁰ *Id.* at 4 (emphasis added).

¹²¹ Tab 92. ORNL Sites—Summary re SNM-82, dated December 1, 1995 at 1.

¹²² Tab 93. U.S. Nuclear Regulatory Commission Region I Inspection Report re SNM-82, dated November 27, 1996.

¹²³ *Id.* at 1 (emphasis added).

¹²⁴ *Id.* at 1.

The NRC tests showed that soil contamination existed at the site in concentrations ranging from 27.7 to 2,613 picocuries per gram — consistent with the results of DOE's RAP team sampling in 1979.¹²⁵ The NRC's report on these results noted that the NRC release limit at that time for processed uranium in soil was 35 picocuries per gram.¹²⁶ In August and September 1996, representatives of the DEC conducted additional soil and groundwater tests that confirmed these elevated levels.¹²⁷

In April 2001, Congressman Peter King of New York, whose district includes Hicksville, wrote to the Department of Energy requesting information on the Hicksville Facility.¹²⁸

In June 2001, Secretary of Energy Spencer Abraham responded that "[t]he portion of the facility involved in AEC work was decommissioned and decontaminated in 1965 and released back to Sylvania for 'unconditional' use."¹²⁹ The Secretary did not mention that this decontamination was inadequate and that contamination had been confirmed at the site by his own agency in 1979 or by the NRC and again by the DOE in the mid-1990s.

The Secretary also stated that the Hicksville Facility "was not included in FUSRAP because, as previously noted, the portion of the site involved in AEC work was determined to have been decommissioned and decontaminated in 1965 and released back to Sylvania for 'unconditional' use."¹³⁰ The Secretary did not mention that in the 1980s, when DOE made the decision to exclude the facility from FUSRAP, it had evidence in its files that contamination levels "of some concern" existed at the site.

Under DEC Supervision, Sylvania Investigates the Contamination

In January 1997, very soon after the NRC's and DEC's tests in the last months of 1996, representatives of the DEC met with representatives of Sylvania. The parties agreed that Sylvania would develop a work plan to investigate the site.

A month later, Sylvania submitted a proposal for an investigation of the site. The company put forward its draft Conceptual Work Plan in February 1997. The plan outlined the tasks necessary to inspect the site for "process residuals," especially uranium and/or thorium

¹²⁵ *Id.* at 3.

¹²⁶ *Id.* at 4.

¹²⁷ *Id.* at 4.

¹²⁸ Tab 86. Letter from Spencer Abraham to Peter King re Sylvania Corning Nuclear Corporation Plant, dated June 11, 2001.

¹²⁹ *Id.*

¹³⁰ *Id.*

produced by the facility's work for the AEC. After several revisions, the DEC approved a final version of the plan, Final Voluntary Investigation Work Plan-Revised May 1998 on June 26, 1998. In the winter of 1997, in conjunction with DEC, Sylvania conducted a non-intrusive investigation of the site consisting of ground penetrating radar survey, an Ultrasonic Ranging and Data System (USRADS) survey, and a site survey to produce a current map of the site.

In April 1999, Sylvania entered into a formal agreement with the DEC under which Sylvania would investigate the extent of radiological contamination on the site of the former Hicksville Facility.

In the summer of 1999, the "Initial Investigation" included the installation of 128 soil borings [SB-001 through SB-109 (includes 16 borings with multiple designations), SG-001, and BK-001 and BK-002] and the completion of five temporary wells (TW-01 through TW-05). Data collected [thorium, uranium, VOCs, semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals] was used to evaluate the nature and extent of process residuals related to former Site use. The sampling of existing Site groundwater monitoring wells (MW-01 through MW-05) and three upgradient wells on NCDPW Property (W-24, W-24D and W-25) was also performed to evaluate the impact of process residuals and upgradient contaminants on the groundwater under the Site.

In the winter of 2000, a "Supplemental Investigation" was performed to further evaluate areas identified during the Initial Investigation where process residuals (from previous manufacturing operations), consisting of U-238, Th-232, VOCs and Ni, were potentially located. These locations were characterized through the advancement of 68 soil borings [SB-110 through SB-170 (includes several borings with multiple designations) and GT-1 and GT-2] and related soil sample analyses.

In 2001, the Golf Course Driving Range surface soil sampling program was conducted to verify that radionuclides were not present.

Also, in the winter of 2001, an Excavation Test Program and a subsurface geophysical screening program were conducted, to better understand subsurface conditions that may affect project implementation, develop protocols for radioactivity field screening, and define the correlation between field instrument readings and soil concentrations of radionuclides.

The fall 2002 Investigation included the advancement of 170 soil borings [U-1 through U-147 (includes several borings with multiple designations)] for steel sheet pile placement. Additional surface soil samples (GDCR-11 through GDCR-14) were collected at the GCDR to further evaluate radionuclide readings near sample location GCDR-1.

The Interim Drainage Investigation (2003) included the installation of six soil gas survey points and six test pits (TP-1 through TP-6) to characterize the area proposed for use as the

interim drainage system, plus the analysis of soil samples collected during the installation of the drainage system.

The Additional Soil Boring Program (2003) included the advancement of 27 soil boring (U-148 through U-174) to aid in the characterization of potential mixed waste areas.

In January 2003, Sylvania and the DEC entered a second formal agreement under which Sylvania would remediate the site's contaminated soil. The DEC approved Sylvania's plan for remediating the site. The final details of this plan were captured in a version produced later in the year.

Under DEC Supervision, Sylvania Remediate Soil Contamination

The soil remediation was a massive excavation project performed with heavy construction equipment that began in early 2003. Soil was excavated from an area that encompassed 14 "cells" located mainly to the east of the 140 building, east and south of the 100 building including about 50 feet onto the offsite driving range, and north of the 70 building. Since the start of the excavation a total of 9,204 containers were filled and disposed of at Envirocare of Utah, Inc., now known as EnergySolutions, a low-level radioactive waste disposal facility. The amount of soils excavated equated to around 200 million pounds. The cells were backfilled with clean soil.

DOE Determines that the Hicksville Site is Eligible For FUSRAP

The DOE sent the U.S. Army Corps of Engineers (the "Corps") a letter in late 2004 stating that the Hicksville site is eligible to be included in FUSRAP if the Corps determines that a response action is required.¹³¹ The Corps published the Preliminary Assessment in May 2005 (the "May 2005 PA").¹³² On September 30, 2005, the Corps advised the Chairman of the Subcommittee on Energy and Water Development, Committee on Appropriations that "[b]ased on [the May 2005 PA] the Corps has determined that radiological contamination in excess of current standards exists at the Site and that there is a high probability that remedial action will be required."¹³³ The Corps further informed the Chairman that "[c]onsiderable licensed (commercial) work took place on the Site involving radioactive and chemical materials similar

¹³¹ Tab 94. Letter from M. Gilbertson (DOE) to R. Vining (Corps) dated December 17, 2004.

¹³² Tab 95. U.S. Army Corps of Engineers, Preliminary Assessment of the Sylvania Corning Plant/Former Sylvania Products Facility (A.K.A. Sylcor) Site in Hicksville, Town of Oyster Bay, Nassau County, New York, dated May 2005.

¹³³ Tab 96. Letter from J. Woodley, Jr., Assistant Secretary of the Army (Civil Works) to Senator P. Domenici, Chairman of the Subcommittee on Energy and Water Development, Committee on Appropriations, dated September 30, 2005, p.1.

Heather L. Cote
April 19, 2006
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to, and in many cases indistinguishable from, those used in non-licensed (AEC) work under various contracts. Although there is a reasonable likelihood that a substantial portion of the contamination on the Site resulted from non-licensed work, geographic segregation of non-licensed and licensed activities was not sufficient to state definitely the portions attributable to each."¹³⁴

Please let me know if you have any questions about this information.

Regards,



D. Bruce McPherson

c: D. Feldman
D. Silverman
A. Polonsky

Enclosures

¹³⁴ *Id.*

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BACKGROUND SUMMARY ON SYLVANIA - CONTRACT AT(30-1)-1293

Canceled Date: <u>11-28-73</u> For the U.S. Atomic Energy Commission <i>[Signature]</i> Division of Classification
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SYMBOL: TM:WJ Dapew

Historical Background

In the latter part of 1947, Sylvania Electric Products, Inc. at Bayside, L. I., initiated a metallurgical research and development program under Contract AT-30-102E-366 with NYOO. At this time, the Commission was interested in the possibilities of powder metallurgy as a method for the fabrication of fuel elements in reactor components. By late 1951, Sylvania had developed apparently successful laboratory methods for producing uranium slugs by powder metallurgy techniques.

On this basis, a contract No. AT(30-1)-1293 was entered into December 10, 1951, with Sylvania Electric Products by NYOO to expand the powder metallurgy development on a pilot plant scale. Following the signing of this contract, Sylvania acquired by outright purchase a development site at Hicksville, suitable for pilot plant operations. There were two major buildings on the property. Building No. 1 was used to house the operation phase of the pilot plant and administrative offices. Building No. 2 was used to house the drafting and design offices, machine shops, storage rooms, and cafeteria. Building alterations and rehabilitation began in February 1952. Initial pilot plant operation began on August 15, 1952. Experimental production was continued through the end of fiscal year 1954.

Beginning in the latter part of January, 1954, at the request of the du Pont Company, Sylvania prepared about 160 uranium oxide-aluminum fuel slugs and lithium salts-aluminum target slugs by powder metallurgy techniques at Hicksville. At that time it was believed that slugs prepared from oxides and salts with aluminum powder would be less reactive with water than cast or extruded aluminum alloy slugs. Although the manufacturing experiment was successful, interest in the development waned due to the solution of the problem through another line of attack. Again at the request of the du Pont Company, in March 1954, Sylvania embarked on a development program to pressure bond and cast, cast and extruded

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uranium-aluminum slugs, by means of a similar technique. The successful experimental work thus initiated resulted in a letter on May 28, from du Pont (L. Squires, Director, Technical Division) to Sylvania (Walter E. Kingston, General Manager, Atomic Energy Division) requesting a formal proposal for pressure bonding 25,000 enriched uranium-aluminum alloy slugs.

In response to this request, on June 17, 1954, a proposal was made to Mr. Curtis A. Nelson from Mr. E. S. Norris, Manager, Sylvania's Control Department, by means of a letter and attachments. After due consideration and negotiation, proposal C of this letter was accepted and supplement 8 to the original contract was signed on June 29, 1954. In the meantime, in order to implement SROO's anticipated intention of accepting some of Sylvania's proposals, Mr. H. B. Fry, Manager, WYOO, by letter of June 8 extended the contract through July 31, 1954, and added \$9,500 to the Commission's monetary obligation under the contract. Sylvania was authorized to proceed to plan and prepare for work at Hicksville on the assumption that the Commission would authorize, prior to August 1, a further contract modification covering one or more of the proposals under consideration.

Contractual Information

The contract is a cost-plus-fixed fee type. Fee is based on 6% of estimated operation cost. The contract is integrated, and is financed by Sylvania funds. The services under this contract were procured by negotiation without formal advertising.

In round numbers, the modified contract calls for the pressure-bond canning of 50,000 enriched slugs (slugs, caps, cans to be furnished by SROO) during the period July 1954 through May 1955. Total estimated cost is \$489,000. Of this, the fee will amount to \$37,000 and \$57,500 is the estimated capital cost. Total construction is estimated as \$7,200, largely for a security storage vault and alarm equipment.

Status Reports

For additional detail concerning overall status of the contract, reference is made to SR-TM-1530, dated 7/15/54 and SR-TM-1611, dated 8/10/54.

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UNITED STATES
ATOMIC ENERGY COMMISSION
New York Operations Office
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SR 846

GC:GHS:sw
AT(30-1)-1293

LETTER CONTRACT NO. AT(30-1)-1293
Dated: December 10, 1951

Sylvania Electric Products, Inc.
P. O. Box 6
Bayside, Long Island, New York
Attention: Dr. W. E. Kingston
Gentlemen:

WSRC DECLASSIFICATION REVIEW	
1st Review Date: 4/28/84	Determination (Circle Number)
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Unchanged
Name: R. L. Collins	2. Classification Changed To:
2nd Review Date: 4/28/04	
Authority: ADD	3. Classification Cancelled
Name: [Signature]	4. Other: (6-AMP-2) 9/00

1. This letter, subject to your written acceptance, sets forth the initial agreement between THE UNITED STATES OF AMERICA (hereinafter referred to as the "Government") acting through the Atomic Energy Commission (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS, INC. (hereinafter referred to as the "Contractor") in anticipation of a definitive contract under which the Contractor (i) shall conduct studies, experimental investigations, and other research and development work, with respect to the establishment and operation of a pilot plant for the evaluation of the following:

- a. The production feasibility of preparing uncanned hot-pressed uranium slugs;
- b. The production feasibility of canning beta-treated conventional uranium slugs and powder metallurgy uranium slugs by elevated temperature, pressure-canning techniques;
- c. The production feasibility of preparing canned slugs by hot pressing uranium and/or uranium hydride powder in aluminum and zirconium cans in a single operation.



SROO Response to
FOIA (SR) - 04-028

Encl 14

[REDACTED]

and (ii) shall establish and operate such a pilot plant. It is contemplated that the foregoing work will demonstrate the feasibility or non-feasibility of large scale production by, among other things:

- aa. Determining the practicability of production equipment;
- bb. Providing sufficient samples for statistical quality analysis;
- cc. Determining the health and safety requirements;
- dd. Providing adequate cost data for complete process analyses.

2. Pending the execution of said definitive contract and to the extent requested by the Commission from time to time, the Contractor shall enter upon, and continue, performance of said work.

3. All applicable articles and provisions required by law, regulation or Executive Order to be included in Government contracts for the type of work described in paragraph 1 above are incorporated herein by reference.

4. Negotiations have been undertaken, and will be continued, for the execution of said definitive contract which will supersede this letter contract. It will include all provisions and articles mentioned in paragraph 3 hereof and such other detailed terms and conditions as the parties agree upon which may or may not be at variance with the provisions of this letter contract.

5. Pending the execution of said definitive contract, (i) the Contractor's expenditures, purchase orders, subcontracts or other commitments in its performance hereunder shall not exceed Eight Hundred Thousand Dollars (\$800,000.00) in the aggregate, and (ii) payments on account, not in the aggregate exceeding said limiting amount, will be made by the Government as the work progresses in accordance with estimates (prepared by the Contractor and approved by the Commission) of the cost to the Contractor of work performed.

6.(a) In case said definitive contract is not executed by January 31, 1952, (or any subsequent date mutually agreed upon) this letter contract will terminate on the stated date or such subsequent date, as the case may be.

(b) The Commission may by written notice at any time terminate this letter contract.

(c) in the event of termination pursuant to either sub-paragraph (a) or (b) of this paragraph, the Government will pay the Contractor an amount equal to the sum of its actual expenditures in the performance of this letter contract (less payments previously made) plus an amount equal to the sum paid or to be paid in settling, with the approval of the Commission, its obligations for commitments made in such performance, but in no event more than the limiting amount set forth in subdivision (f) of paragraph 5 hereof. The Government may, in its discretion, assume any such obligations.

(a) All property furnished by the Government to the Contractor for use in performance of this letter contract shall remain the property of the Government.

(b) Title to all property specially procured by the Contractor in performance of this letter contract and the entire acquisition cost of which is directly recoverable hereunder shall pass directly from the vendors or other suppliers to the Government and shall remain the property of the Government. Title to all other property furnished by the Contractor in performance of this letter contract and the entire acquisition cost of which is directly recoverable hereunder shall pass to the Government at the respective times of such furnishing and shall remain the property of the Government.

(c) All technical data (including, without being restricted to drawings, designs, specifications, memoranda and notes), of whatsoever kind or nature furnished or prepared by the Contractor pursuant to or developed in connection with its performance under this letter contract, shall be (as and when prepared) and remain the property of the Government.

(d) All items of property referred to in sub-paragraphs (a) and (b) of this paragraph, including products, by-products, work-in-process, residues, salvage, wastage and scrap resulting therefrom, and all data referred to in sub-paragraph (c) of this paragraph, are hereinafter referred to as "Government property".

(e) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property, but not of any consumption of materials and supplies in its performance under this letter contract, nor of any lost, destroyed or damaged technical data which are worthless from three standpoints, to wit: monetary, practical, and security. The Contractor shall not be liable to the Government for any damage to, or loss or destruction of, Government property, provided such damage, loss, or destruction is not due to any act or failure to act, on the part of a then corporate officer of the Contractor, which is tantamount to wilful misconduct or gross negligence.



9.(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this letter contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and the rights under any application or patent that may result; provided, however, that the Contractor, in any event, shall retain at least a non-exclusive, irrevocable, royalty-free license under said invention, discovery, application, or patent, such license being limited to the manufacture, use, and sale for purposes other than use in the production or utilization of fissionable material or atomic energy. Subject to the license retained by the Contractor, as provided in this paragraph, the judgment of the Commission on these matters shall be accepted as final; and the Contractor for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this letter contract.

(c) Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of sub-paragraphs (a) and (b) of this paragraph 8 from all persons who perform any part of the work under this letter contract, except such clerical and manual labor personnel as will not have access to technical data.

(d) Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making this paragraph 8 applicable to the subcontractor and its employees.

9.(a) It is understood that unauthorized disclosure of any, or failure to safeguard all, top secret, secret, confidential and restricted matter specifically indorsed as "Security Information" that may come to the Contractor or any person under its control in connection with the work under this letter contract, may subject the Contractor, its agents, employees and subcontractors to criminal liability under the laws of the United States. See the Atomic Energy Act of 1946 (Public Law 585 - 79th Congress). See also Title 18, United States Code, Secs. 5 and 11, Secs. 791 to 797, both inclusive, Secs. 2381 to 2390, both inclusive, and Sec. 3241; and Title 50, United States Code, Secs. 40 and 42.

[REDACTED]

(b) The Contractor agrees to conform to all security regulations and requirements of the Commission. Except as the Commission may authorize, in accordance with the provisions of the Atomic Energy Act of 1946, the Contractor agrees not to permit any individual to have access to restricted data until the Federal Bureau of Investigation shall have made an investigation and report to the Commission on the character, associations and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. The term "restricted data" as used in this sub-paragraph means all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security.

(c) The Contractor shall insert in all subcontracts under this letter contract, and in other agreements entered into by the Contractor if the scope thereof involves classified data, provisions similar to the text of subparagraphs (a) and (b) above.

10.(a) The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this letter contract.

(b) The Contractor shall make such reports to the Commission, with respect to the Contractor's activities under this letter contract, as the Commission may require from time to time.

11. The Contractor agrees to conform to all health and safety regulations and requirements of the Commission. The Contractor shall take all reasonable steps and precautions to protect health and minimize danger from all hazards to life and property, and shall make all reports and permit all inspections as provided in such regulations or requirements.

12. The Contractor shall not subcontract any part of the work it is obligated to perform under this letter contract, except as authorized in writing by the Commission. All subcontracts hereunder shall be subject to, and submitted for, Commission approval. The Government reserves the right from time to time by written notice from the Commission to the Contractor to make any or all commitments or classes of commitments hereunder other than subcontracts subject to, and to require their submission for, Commission approval.

[REDACTED]

13. Except as otherwise specifically provided in this letter contract, all disputes which may arise under or in connection with this letter contract, and which are not disposed of by mutual agreement, shall be decided by a representative of the Commission duly authorized to administer performance of the undertakings hereunder, who shall reduce his decision to writing and mail a copy thereof to the Contractor. Said decision shall be final and conclusive on the parties hereto, subject to the right of the Contractor to appeal as provided for in the sentence next following. Within 30 days from this mailing, the Contractor may appeal in writing to the Commission, whose written decision thereon, or that of its representative, representatives or board duly authorized to determine such appeal or such an appeal, not including the representative mentioned in the first sentence of this paragraph, shall be final and conclusive on the parties hereto. Pending and subsequent to the decision on any dispute under or in connection with this letter contract which may arise prior to completion of the Contractor's performance hereunder, the Contractor shall diligently proceed with the performance of its undertakings under this letter contract. Expenses incurred by the Contractor in connection with the submittal of disputes for initial decision and/or for appellate decision under this paragraph shall not be recoverable under this letter contract. In connection with any appeal procedure under this paragraph, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal.

14. The terms "Atomic Energy Commission" and "Commission" as used herein mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

15. This letter, executed in triplicate on behalf of the Government, is forwarded to you for your consideration. If satisfactory, it is requested that the following acceptance form on copies 1 and 2 hereof be executed on behalf of your company and that such copies be returned to this office as promptly as possible. Copy 3 is for your retention.

Very truly yours,

THE UNITED STATES OF AMERICA

BY: U. S. ATOMIC ENERGY COMMISSION

By: W. E. Kelley

Accepted as of the 10th day
of December, 1951.

SYLVANIA ELECTRIC PRODUCTS, INC.

By: P. Shirley Carter

Its: vice President
(Title)

5816.008,0093

See letter 11/19/65

APPRAISAL OF AEC FUNDED IMPROVEMENTS
AT SYLVANIA ELECTRIC PRODUCTS INC., PLANT
IN HICKSVILLE, LONG ISLAND, NEW YORK

U. S. ARMY ENGINEER DISTRICT, NEW YORK
CORPS OF ENGINEERS
NEW YORK, NEW YORK

7 OCTOBER 1965

enc 12

SYL00051796

REVIEW OF APPRAISAL OF GOVERNMENT FINANCED IMPROVEMENTS
AT SYLVANIA KIRCHGESS PROPERTIES INC., PLANT
IN HICKSVILLE, LONG ISLAND, NEW YORK

I have revised the estimates of net salvage value and value in place as set forth in the subject appraisal dated 18 October 1965.

Engineering estimates supplied by the New York District Engineering Division constitute the basis for the appraisal. Appropriate adjustments were made by the appraiser to reflect a typical purchaser's approach as to the "in place" value of the subject improvements. This approach reflects the appraisers' opinion of their value to the contractor and is reported to represent an interpretation of the contract terms, as outlined in paragraph 3 of the appraisal report, by the Atomic Energy Commission.

There is very little support for the write-down of the electrical installation from the \$25,000 Engineer estimate to the \$15,000 appraisers' opinion reflected in the report. It may well be that the higher figure is more appropriate, at least during initial negotiations.

In my opinion the value estimates otherwise set forth are fair and reasonable under the basic appraisal premises. The appraisal as presented is approved.

Dated: 2 November 1965


JOHN K. KIRCKESS
Chief, Appraisal Branch
EUB

SYL00051797

**REVIEW OF APPRAISAL OF GOVERNMENT FUNDED IMPROVEMENTS
AT PENNSYLVANIA ELECTRIC PRODUCTS INC., PLANT
IN NICKSVILLE, LONG ISLAND, NEW YORK**

The net salvage value and the value in place set forth in the appraisal report dated 7 October 1965, prepared by Warren Gordon, staff appraiser, have been reviewed.

The reviewing appraiser, on several occasions, inspected the Nicksville plant and is familiar with the improvements to the land and structures made with Atomic Energy Commission funds.

In the opinion of the reviewing appraiser the value estimates set forth in said appraisal are fair and reasonable and the undersigned concurs in same.

Dated: 18 October 1965

John W. Bates

JOHN W. BATES
Chief, Appraisal Branch

APPRAISAL OF AEC FUNDED IMPROVEMENTS
AT SYLVANIA ELECTRIC PRODUCTS INC., PLANT
IN HICKSVILLE, LONG ISLAND, NEW YORK

I N D E X

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Exhibits

- Exhibit "A" - Sketch of Perimeter of Plant
Exhibit "B" - Drawing Showing Location of Structure
Exhibit "C" - List of Government Funded Improvements

APPRAISAL OF AEC FUNDED IMPROVEMENTS
AT SYLVANIA ELECTRIC PRODUCTS INC., PLANT
IN HICKSVILLE, LONG ISLAND, NEW YORK

1. PURPOSE:

The purpose of this report is to estimate the current "value in place" and the current "net salvage value" of AEC funded improvements installed at the Hicksville, Long Island, New York plant of Sylvania Electric Products Inc.

2. AUTHORITY:

This report is prepared pursuant to request of Savannah River Operations Office, Atomic Energy Commission, contained in letter dated 29 September 1965, addressed to Division Engineer, U. S. Army Engineer Division, North Atlantic.

3. GENERAL INFORMATION:

In December 1951 the Atomic Energy Commission and Sylvania Electric Products Inc. entered into a contract bearing No. AT(30-1)-1293 providing for the performance by Sylvania of certain work for the Government involving the use and occupancy of the land and buildings of Sylvania located on Cantiague Road, Hicksville, New York.

Under and pursuant to the terms of said contract and subsequent modifications thereof, renovations, alterations, improvements and additions were made to the land and/or buildings of Sylvania and same were done at the expense of the Government.

The provisions of said contract, as modified, provided for the payment to the Government, upon termination or expiration of the agreement, of an amount equal to the mutually agreed value of such improvements. This value was to be determined after giving full consideration to the appraised value "in place" and the current value to the contractor of such improvements, which shall not be less than the appraised "net salvage value" of any improvement.

The term "appraised value in place" is defined by the contract as meaning the value of the improvements in their existing condition, as determined by the appraiser(s) as of the date of the appraisal.

The term "appraised net salvage value" is defined as the estimated salvage value as determined by the appraiser(s) of the improvements less the estimated costs of the removal of such improvements and the restoration of the land and buildings to substantially the same condition existing immediately prior to the incorporation therein of such improvements, reasonable wear and tear excepted.

The contract has now terminated and the provision for settlement of Government investment in improvements is in effect.

4. LOCATION OF PROPERTY TO BE APPRAISED:

The land and buildings that were improved at Government expense, as aforesaid, are located on the east side of Cantiague Road, approximately 900 feet north of West John Street in Hicksville, Long Island, New York. The parcel is designated as Lot 80, Block 499, Section 11, Hicksville, New York on the tax maps of the Town of Oyster Bay. This lot is almost rectangular in shape having approximately 449 feet of frontage on Cantiague Road, a depth of 700 feet on one side, of 613 feet on the other side and a rear lot line of approximately 459 feet. The land is assessed for \$30,610 and land and buildings for \$169,750. (The Town tax office has informally advised that its records indicate that some buildings located on the land are Government owned.) Sylvania also owns Lot 79 which is adjacent to Lot 80 but is not involved in this report (except for an air conditioning unit located in the improvement on Lot 79). Attached hereto as Exhibit "A" is sketch showing the location and size of said parcel.

4A. ZONING AND HIGHEST AND BEST USE:

Parcels 79 and 80 are zoned by the Town of Oyster Bay for light industry. The immediate vicinity is presently used for light industrial endeavors and is so zoned, except for park land within the area. Land zoned for such industrial use within Hicksville and in Nassau County is in demand and in short supply. Consequently, the highest and best use of the Sylvania Plant is for light industry.

5. DESCRIPTION OF IMPROVEMENTS:

The aforementioned parcel contains on it two main structures that are hereinafter referred to as buildings #1 and #2. In addition a pump house, a 150,000 gallon storage tank, several other smaller buildings, walks, parking areas, sumps, catch basins and dry wells are located on the property. The entire area is fenced and there also exists interior fencing around the sumps and portions of the buildings.

Building #1 is an irregularly shaped one story structure suitable for manufacturing. The construction is part block and part frame which has had stucco applied to the exterior. A room approximately 20'x50' has been constructed on the roof of this building and access to said room is by means of steel steps contained in the interior of the building. The front portion of this building has been partitioned into office space which is air conditioned by a ten ton unit with associated duct work. Electric current having a voltage of approximately 440 volts is available and plug in buss lines are contained in the production portion of the improvement. This building has adequate washroom facilities, contains approximately 19,000 square feet of space, has an average ceiling height of 13 feet, is adequately sprinklered and has heat available.

Building #2 is an irregularly shaped one story structure and contains approximately 28,000 square feet of space. The construction is similar to that of building #1 except that the ceiling height averages approximately ten feet. This improvement is suitable for manufacturing or machine shop purposes, has electricity of approximately 220 volts available and contains plug in buss lines. This building contains an adequate cafeteria, washrooms and also is sprinklered

The pump house is block on slab, is approximately 15 feet by 24 feet and approximately 8 feet high with a slightly pitched roof. The 150,000 gallon water storage tank is constructed of steel, is approximately 28 feet 6 inches in diameter and is 32 feet high. The other buildings are not involved in this appraisal as they do not contain any Government constructed improvements except for a building designated gas house - building #6, which is constructed of block, is approximately 15 feet by 18 feet and has a ceiling height of approximately 8 feet. The premises contains two bituminous parking areas one of which, containing approximately 2500 square yards, was constructed with Government funds. Several dry wells and catch basins were installed in order to provide adequate drainage.

Attached hereto as Exhibit "B" is a drawing made in 1959 of most of Lot 80 and shows the location and shape of the principal structures. It does not show the pump house and water tank since these improvements were constructed in 1960.

6. ITEMIZATION OF IMPROVEMENTS TO PROPERTY MADE PURSUANT TO CONTRACT AT(30-1)-1293:

Attached hereto as Exhibit "C" is list of the improvements that was furnished by the Atomic Energy Commission.

Investigation was made to determine the condition of the premises and installed equipment prior to the installation of the Government improvements, particularly with regard to the heating system, the ventilation system and the electrical wiring. Little, if any, information as to the prior condition of the buildings was able to be obtained except that they were constructed in the early 1940's during World War II. Consequently, assumptions were made as to the prior condition based upon inspection and apparent age and condition of the existing fixtures, equipment and material. No usable information could be obtained with regard to certain items, such as glass installation, and no estimate for same is contained herein.

7. ESTIMATE OF NET SALVAGE VALUE:

The term "gross salvage value" hereinafter set forth is defined as the highest price obtainable in the open market for the Government funded improvements when sold as is, where is, for use elsewhere than on the premises, assuming that no expense to the buyer is involved in the dismantling and/or removal of the improvements from the property.

The term "net salvage value" is defined as the "gross salvage value" less the estimated cost of dismantling and/or removal of the Government funded improvements and less the estimated cost of restoration of the land and/or buildings to substantially the same condition existing immediately prior to the incorporation therein of such improvements, fair wear and tear excepted.

The following estimate of salvage value is based on a report furnished by an engineer-estimator. The items hereinafter set forth are only those which have realizable net salvage value. There is not included in this report those items which have no net salvage value or where the cost of removal and restoration exceeds the gross salvage value. (The asset number hereinafter set forth is identical with that contained on attached Exhibit "C".)

<u>Asset No.</u>	<u>Description</u>	<u>Location</u>	<u>Gross Salvage Value</u>	<u>Cost of Removal & Restoration</u>	<u>Net Salvage Value</u>
3478	Elec. installations	Bldg 1 & 2	\$9,000	\$7,000	\$2,000
2092	Fountain, wash, circular	Bldg 1			
		Prod. washrm	75	25	50
3277	Fountain, wash, circular	Bldg 1			
		Prod. washrm	75	25	50
3278	Fountain, wash, circular	Bldg 2 Prod.			
		Mach. washrm	50	25	25
3279	Fountain, wash, circular	Bldg 2 Prod.			
		Mach. washrm	50	25	25
2180	Fountain, wash, circular	Bldg 2 Mach.			
		shop washrm	75	25	50
3485	Drain system & tanks	Bldg 1 - for process water	150	125	25
3513	Storage tank		600	500	100
"	Underground instal. complete (sprinkler system)		500	100	400
"	Sprinkler system		400	200	200
3053	Air conditioner	(Bldg 1	{100	{25	{75
3683	Cooling tower				
3250-51	Blower w/motor	Bldg 1 - roof	125	100	25
3360	Fan, ventilating	Bldg 2	100	75	25
3093	Exhaust fan	Bldg 1 - roof	200	100	100
3275	Air conditioner	Bldg 4	100	25	75
3459	Air system	Bldg 1	400	250	150
3477	Fan	Bldg 1 - roof	100	75	25
				TOTAL	\$3,400

8. ESTIMATE OF VALUE IN PLACE:

"Value in place" is defined as the amount by which the improvements involved enhance the market value of the property to which they are made. Consequently, the in place value hereinafter assigned to the Government funded improvements is that value which the appraiser estimates the improvements would contribute to the market value of the real estate.

During the course of the contract substantial improvements were made to building #1 at a cost well in excess of \$100,000. Many of these improvements were solely for the purpose of accommodating the structure to the particular needs for production pursuant to the terms of the contract and contribute little if anything to the market value of the property. The trenching and pits constructed in building #1 were for the purpose of accommodating certain machinery and equipment and processes being conducted in the plant. Said trenching and pits would normally not be required by the ordinary user of such a building and contribute no value to said building. The construction of the dustproof room, the expansion of the accountability area, the quality control room, the alterations to the chem. lab. and the production office all consisted of interior partitioning and contribute nothing to the market value.

Based upon available information it is believed that the building, prior to the installation of the Government funded improvements, had an adequate heating system and the additions made thereto by the Government would not be reflected in the market value of same. The underground telephone and electric duct lines were installed approximately 13 years ago. The condition thereof could not be determined and it is believed that a purchaser of this property would not pay any additional consideration on account of this item. The fire protection system installed in 1952 in buildings 1 and 2 is no longer required since a sprinkler system was installed in 1960 and, consequently, contributes no value to the real estate. The room that was constructed on the roof of building #1 is poorly situated, has inadequate floor constructed of plywood and steel plates and is in excess of the requirements of a user of this building. The cost of normal maintenance renders it a detriment and no value has been assigned to this addition.

The air conditioner and cooling tower with associated duct work cools the administrative space located in building #1 and is a factor to which a purchaser would give consideration. The air conditioner is approximately 8 to 10 years old and the cooling tower is at least 4 years old. It is estimated that the air conditioning system in its present condition would enhance the value of the property to the extent of - - - - - \$400

In 1952 metal grill work was affixed to the exterior of the windows of buildings #1 and #2 to provide for additional security. This grill work presently adds to the security of each building and is a factor that a purchaser or lessee would give consideration to as it affords an additional degree of protection. In a negotiated deal it is estimated that such improvements would add to the purchase price the sum of approximately - - - - - \$ 500

In 1952 Government funded electrical installations were made to buildings #1 and #2. Building #1 contains 220 volt power service panel with breakers, fusing and wiring, 300 linear feet of bulldog buss duct with fusing ranging from 30 to 200 amps., fluorescent industrial type lighting fixtures with associated wiring, 440 volt breaker panel and wiring and miscellaneous wiring, conduits and panels. Building #2 contains approximately 240 linear feet of bulldog buss duct providing 220 volt power, approximately 220 fluorescent lighting fixtures and miscellaneous wiring and conduits. The Atomic Energy Commission has estimated the cost thereof to be approximately \$171,000. An engineering estimator has stated that the approximate present day cost for the electrical installations would be \$140,000 and the depreciated value of this equipment to be \$49,000. He estimates the cost of modifying the system to present day standards and usability to a potential light manufacturer to be \$24,000 giving an estimated present day in place value of the Government installations of \$25,000. This engineering approach is a cost less depreciation method and gives an upper limit of value. An ordinarily prudent purchaser would not pay this amount for he would be able to negotiate for less than this maximum dollar value and he would not pay top dollar for a system that, although it could be modified to meet his needs, would not be the system that would be designed in the first instance for his manufacturing enterprise. The amount of \$25,000 does not take into consideration the electrical system that existed prior to the change made with Government funds. Information concerning this aspect could not be obtained. It is known, however, that these buildings were erected during World War II, were used for the manufacture of radio transmitters and it is assumed that they contained a lighting and power system. Based upon the foregoing information and considerations and the further fact that the 440 volt breaker panel and wiring which serve two special induction furnaces would be of little, if any, value to a potential manufacturer, it is estimated that the present day in place value of the Government funded electrical installations is - - - - - \$ 15,000

Alterations to the cafeteria, located in building #2, were made in 1952 and 1956. This resulted in an increase in cafeteria space and more effective utilization of said space. The cafeteria, as it now exists, would be adequate for the needs of a manufacturing or related enterprise using both buildings. It is considered that such alterations contribute to the value of the property approximately \$400

A five ton air conditioning unit was installed in 1957 in the Accounting Department then located in building #2. This unit is at least 8 years old and contributes to the building value the sum of - - - - - \$100

In 1956 ceiling exhaust fans were installed in building #2, in 1957 a ventilating fan was installed at said building and in 1956 and 1961 roof ventilators were also installed in this building. These fans were required in order to provide for adequate ventilation so that personnel in the building and in the cafeteria would be more comfortable during the summer and at other times when equipment was operating. Said equipment would be given consideration by a purchaser or lessee and would contribute to the purchase price of the structure to the extent of - - - - - \$400

Circular wash fountains were installed in the washrooms in buildings #1 and #2 in 1956 and 1960. Their contribution to the real estate value is estimated to be approximately - \$300

In 1952 a building, designated gas house, hereinbefore described, was constructed. The most likely use of such a building is for storage of combustible material. The Sylvania Plant presently contains adequate structures suitable for storage of material and this house would only contribute to the value of the property the nominal sum of \$100

The fences installed by the Government are all interior, and not ordinarily required or installed by a normal user and, consequently, are assigned no value.

During the period from 1957 to 1964 approximately five dry wells and two catch basins were constructed on the property. They were required in order to provide adequate drainage and have a definite contribution to the value of the real estate. It is estimated that their contribution is in the amount of - \$1,100

A cesspool, a clay pipe drain, a drain system and tanks and sumps were constructed on the property during the course of the contract. These items were required in order to process water and for treatment and disposal of materials associated with the production required by the Atomic Energy Commission. The ordinary user of this property would have no need for same and, as a matter of fact, these items constitute a detriment. Consequently, no value is assigned to these improvements to the land.

In 1960 an overhead pipe sprinkler system was installed in both building #1 and #2, together with the required installation of lines, valves, etc. At that time there was an 8 inch municipal main within the bed of Cantiague Road. However, the pressure was not sufficient for the requirements of the sprinkler system and a pump house and 150,000 gallon storage tank were necessary in order to have a fully operating and efficient sprinkler system. Subsequent to the erection of the pump house and storage tank the pressure of the 8 inch main was increased by the municipality so that at present the sprinkler system could operate effectively and efficiently without pumping equipment and storage tank. The sprinkler system and particularly the number of sprinkler heads is in excess of the requirements of an ordinary user of this property. After giving due consideration to the type of sprinkler system, the fact that as it presently exists it is in excess of ordinary needs and that it is approximately five years old, it is considered that this system would contribute approximately - - \$15,000 to the fair market value of the land and improvements exclusive of the storage tank and pump house.

The storage tank, while no longer required for the sprinkler system, could be utilized for storage of liquids and is assigned a value of - - - - - \$ 500

The pump house could be utilized for storage or other purposes and is assigned the value of - - - - - \$ 200

Parking field #2, a bituminous paved area, was constructed in 1956 at a cost of approximately \$8,000. Such a parking area would be required by an operating plant utilizing both buildings #1 and #2. A contribution of \$ 2,000 has been assigned to said parking field.

An air conditioning unit without duct work is located in building #4. This unit has a realizable contribution to the fair market value of the property, which is estimated to be - - - - - \$ 200

TOTAL \$36,200

9. SUMMARY:

<u>Item</u>	<u>Estimated Net Salvage Value</u>	<u>Estimated Value in Place</u>
Security windows	-	\$ 500
Gas House	-	100
Elec. installations	\$2,000	15,000 + 10,000
Additional alterations to cafeteria	-	400
Fans and ventilators	150	400
Wash fountains	200	300
Parking field #2	-	2,000
Drain system and tanks	25	-
Dry wells and catch basins	-	1,100
Sprinkler system, including underground installation	600	15,000
Storage tank	100	500
Pump house	-	200
Air conditioner and cooling tower (Bldg 1)	75	400
Blower with motor (Bldg 1 - roof)	25	-
Air conditioner (Bldg 2)	-	100
Air conditioner (Bldg 4)	75	200
Air system (Bldg 1)	150	-
TOTAL	\$3,400	\$36,200

10. LIMITING CONDITIONS:

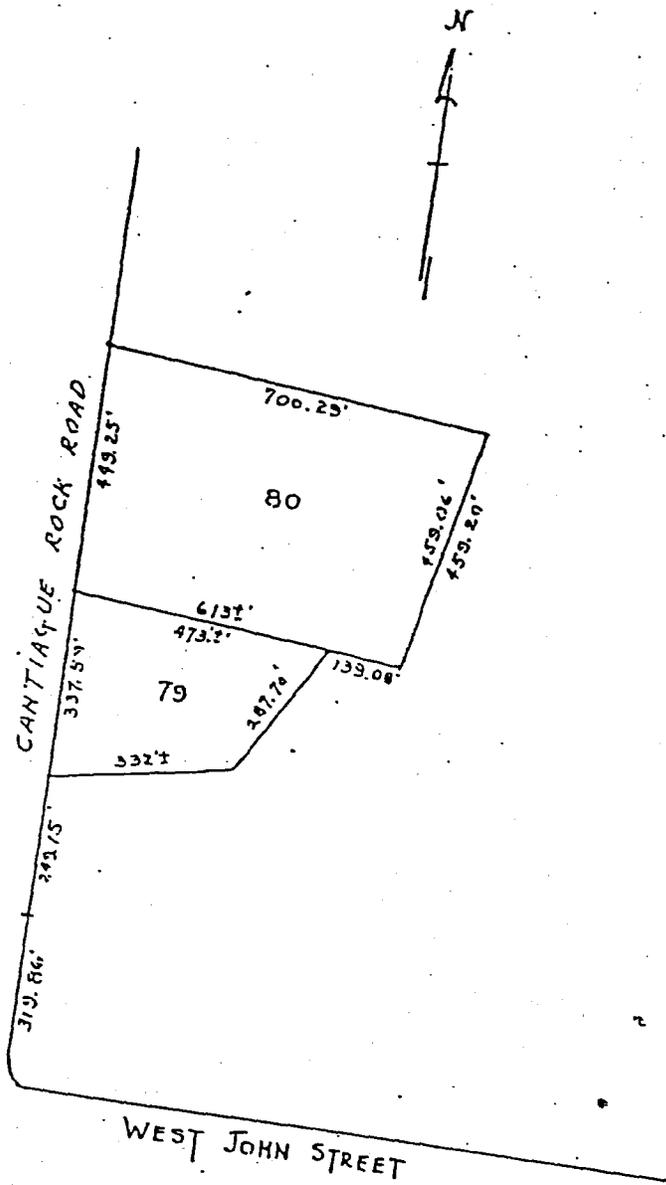
Pertinent material, relevant information and data that have been furnished by others are believed to be reliable and correct; however, no responsibility for the accuracy thereof is assumed.

11. CERTIFICATION:

I hereby certify that I have inspected the above described premises, that the values shown herein represent my best unbiased judgment as to the current value in place of the Government funded improvements, that the statements made and information contained in this report are true to the best of my knowledge and belief and that I have no present or intended future interest in any of the property which is the subject of this report.

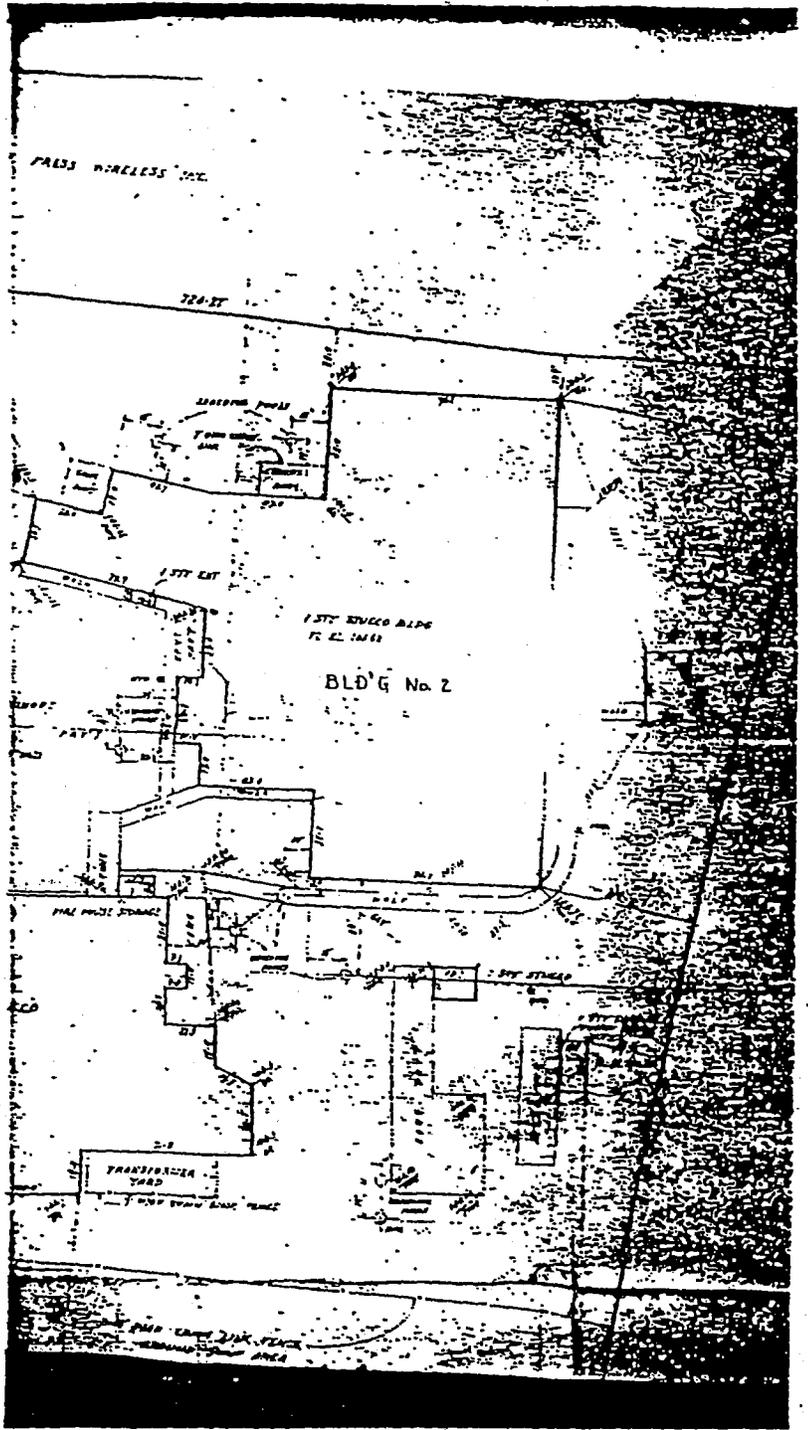
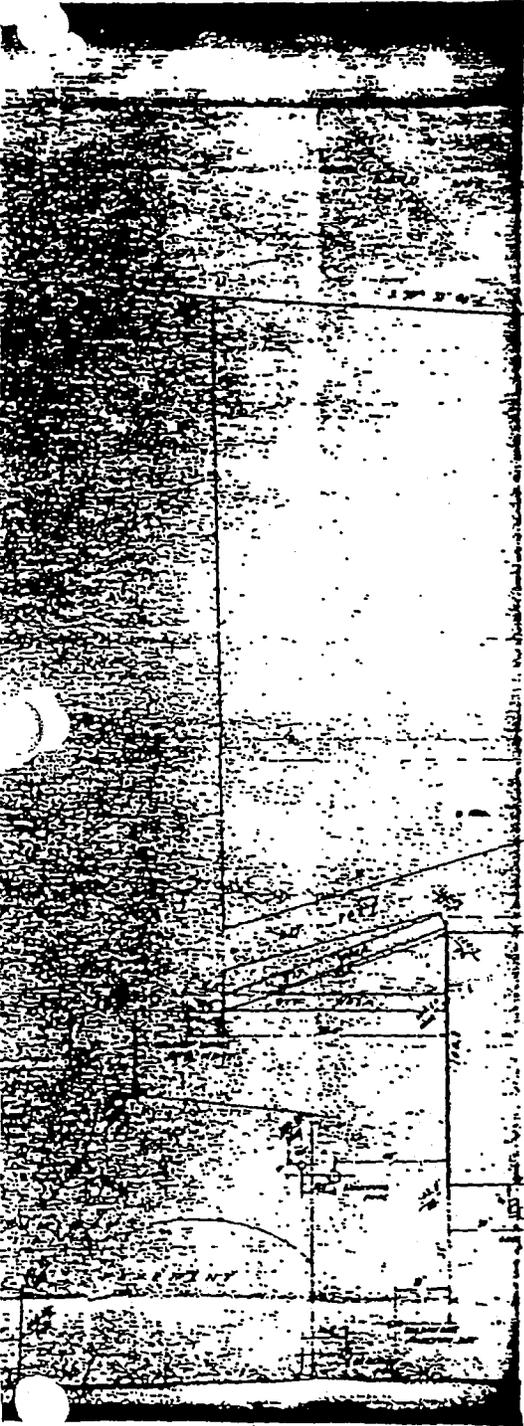
Dated: 7 October 1965


WARREN GORDON
Staff Appraiser

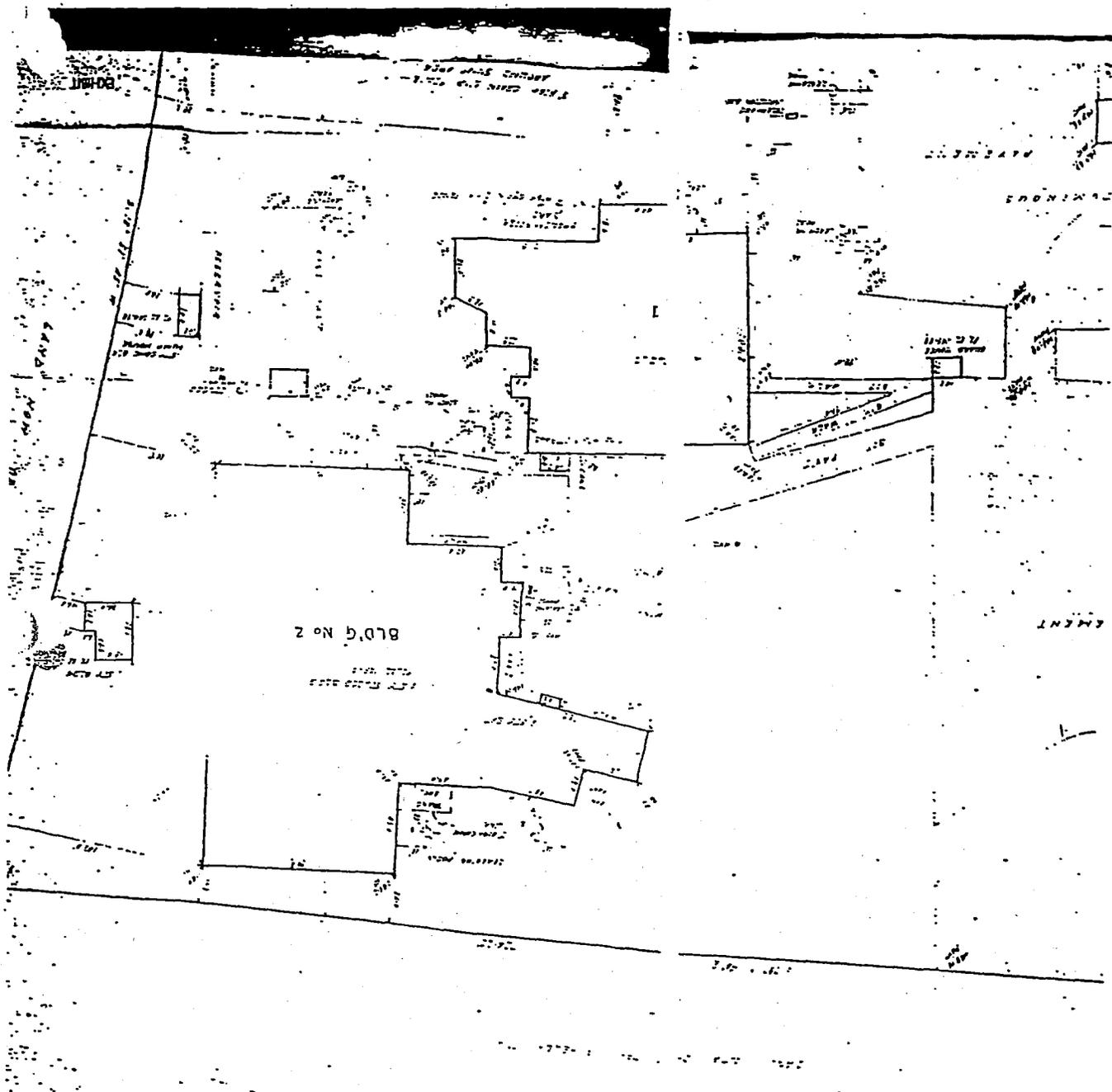


SECTION II BLOCK 499
 TOWN OF OYSTER BAY
 HICKSVILLE, N.Y.

EXHIBIT A



SYL00051811



SYL00051812

Box A3

~~SECRET~~
~~SECURITY INFORMATION~~

NY 2.2.53
2.25.53
NY.14
NY.7

TO : H. B. Fry, Manager, NYOO Date: June 26, 1953

FROM : S. H. *[Signature]*, Process Development Branch,
Production Division

SUBJECT: DETAILED REPORT - ADDENDUM TO "SUMMARY OF EVALUATION
OF POWDER METALLURGY PROJECT" - JUNE 23, 1953

SYMBOL: PP:ABB

Purpose

In February 1953 you requested us to evaluate the Powder Metallurgy Project from both the technical and economic viewpoints in order to provide information for your decision regarding the future development program after July 1, 1953. This project is being conducted by the Sylvania Electric Products, Inc., under Contract AT(30-1)-1293 (Hicksville Operation) with support from Contract AT(30-1)-GEN 365 (Bayside Research).

This report presents our evaluation of the project and of the program proposed by Sylvania for the next fiscal year. This evaluation covers the technical aspects and the relative economics of the proposed powder metallurgy facility in comparison to present facilities at EMPC, and briefly mentions other intangibles to be considered in your decision. Our recommendations cover the general goals for the future development work.

Introduction

Studies of the potential of powder metallurgy as a means of producing fuel elements for reactor operation were begun late in 1947. At this time the Hanford reactor operation was being troubled by serious fuel element failure, in the order of 10-20 failures per 50,000 slugs charged. It was hoped that a powder metallurgy slug would be able to reduce these failures and thereby effectively increase the production of fissionable materials. It was because of this serious slug failure rate that major emphasis was placed on this and other activities which could conceivably improve this situation.

A preliminary evaluation, NYO-162, was prepared by S. B. Rotoff (then with the NYOO) on the basis of laboratory scoping studies. This evaluation indicated that substantial cost savings, in the order of \$1,000,000 to \$5,000,000 per year, (depending upon the extent the existing processes would be changed), might be realized

CLASSIFICATION CANCELLED

BY AUTHORITY OF *[Signature]*
BY *[Signature]* 9/26/80
[Signature] 9/24/80

~~SECRET~~
~~SECURITY INFORMATION~~

ORO 51103

SYL00050890

June 26, 1953

from the full scale operation of a plant using the proposed processes. When laboratory studies showed the technique was promising, a pilot plant was constructed at Hicksville in 1952 to produce test quantities of powdered metal slugs for pile operation as well as to demonstrate some of the laboratory techniques on a larger scale.

By January 1953 the Hicksville Pilot Plant was in operation producing 4" Hanford slugs. Simultaneously, the process was being developed at Hicksville with the assistance of the Bayside Laboratory, and certain engineering and design activities were also in progress.

By the time the pilot plant operations began, the failure rate at Hanford had been reduced to a level considered quite acceptable to Hanford - approximately 1 failure per 50,000 slugs charged, presumably because of improvements in the MCO fabrication techniques and the Hanford canning operations.

Hanford has studied the reduction of slug failures and the nature of the remaining failures and recommended that the FMPC wrought metallurgy process produces metal slugs acceptable for present power levels and that the proposed powder metallurgy production facility could not be founded on need for improved metal but would have to be justified solely on the basis of slug production economics.

It is timely now to reevaluate the overall project solely from the standpoint of relative economics and the technical feasibility.

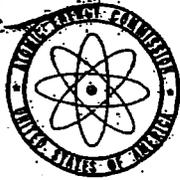
The Process Development Branch has studied the laboratory and pilot plant development activities, the preliminary design of the proposed production plant, the estimated capital and operating costs for the proposed facility, and the techniques for mechanization used by Sylvania in their commercial activities. Also, we have reestimated the operating costs for the FMPC facilities which would be replaced by the proposed powder metallurgy operations.

This report summarizes our activities on this project. The technology of the process is briefly discussed, the economics of both the proposed facility and the FMPC facilities are estimated and analyzed, and conclusions are drawn regarding continued development, construction and operation of the proposed plant are discussed. As a result our findings and recommendations for future development activities are presented.

Discussion

Technology

The chemical and metallurgical processes for the proposed new facility are presented in detail in Sylvania's Report No. DCF-259H dated May 26, 1953. The process, changed in minor respects by us to keep the same process criteria as for FMPC processes, consists of the following steps:



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

Uk...
CB-9R

DC FILE

MAY 17, 1965

Mr. John F. Conroy
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Conroy:

This letter confirms Mr. Karanowski's telephone call to Captain Bauer of your staff advising that the Atomic Energy Commission has authorized the Savannah River Operations Office to terminate its cost-plus-fixed-fee contract with the Sylvania Division, Sylvania Electric Products, Inc., for fuel fabrication operations at the Sylvania-owned plant at Hicksville, New York.

As you know, for a number of years Sylvania has clad a portion of the fuel elements used in the EBR production reactors, of which the most recent have been the inner elements of the V-1 and V-2 design. Although the performance of Sylvania has been excellent throughout the period of the contract, the shutdown of one EBR reactor in June 1964, and changing program requirements has and will continue to reduce EBR's requirements for the type of fuel elements for which capability now exists at the Hicksville plant. Consolidation of all fuel element manufacturing at EBR will result in significant cost savings and enable K. I. du Pont de Nemours & Co., the operating contractor, to better utilize manpower during periods of fluctuating requirements for the many alternate fuel types used in the production of the various reactor products assigned to EBR, such as tritium, U-233, curium, etc.

Further, du Pont has developed and converted its uranium canning facilities from the hot-press-bonding process to a hot-die-sizing process which offers additional savings and a flexibility to accommodate change in fuel element design without major changes in equipment. Sylvania's only existing capability is for the hot-press-bonding process; therefore, it would have been necessary to equip Sylvania for the hot-die-sizing process in order to take full advantage of its potential cost savings and operational flexibility. EBR has adequate hot-die-sizing capacity to handle the entire fuel load of outer and inner elements.

DOE - History Division
Switland materials - AEC
Accession # 326-76-0006
Job 6546
Box 214 USDOE 017916
F MAT-2 Savannah River
(Outback) January -
~~RECEIVED~~ December 1965



Mr. John T. Conway

- 2 -

The Special Nuclear Materials Program portion of the AEC's FY 1966 budget estimates assumed that the Sylcor operation would be terminated by the end of FY 1965. Therefore, this action does not affect the FY 1966 budget now before the Congress.

There were 64 Sylcor employees engaged in contract operations as of April 30, 1965, as compared to the peak employment of 300 in mid-1960 and employment of 190 in December 1963, just prior to the announced production cutback which resulted in the shutdown of an SER reactor in June 1964.

Should you wish further information concerning this matter, please let us know.

Sincerely yours,

R. E. Hollingsworth
General Manager

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JUL 10 1965
GENERAL MANAGER
HARRIS

bcc: Chairman (1)
GM (1)
AGMPP (1)
OCR (2)
OGC (1)
SROO (1)

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PA P:DIRECTOR OGC/OCR AGMPP AGM DGM GM
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5/14/65
(See conc. on attached yellow)
see conc. on attached yellow

USDOE 017917

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UNCLASSIFIED

Files
THRU : H. L. Kilburn, Director, Technical & Production Division November 21, 1955
Winston Davis, Deputy Manager, SROO
Paul J. Hagelston, Chief, Reactor Materials Branch SR-TM-2878
Technical & Production Division

MEETING AT NYOO RE SYLVANIA

This document consists of 2 pages

SYMBOL: TM:PJH:jfd

No. 3 of 7 Copies, Series A

At a meeting held at NYOO on November 15, 1955, the following were present:

NYOO
Bill Harris, Industrial Hygiene
Cy Braiden, Accountability
Bob Kirkman, Security
Pete Murphy, Security
Joe Clark, Deputy Manager *
Warren Donnelly, Contracts
Merril Eisenbud, Manager **

SROO
Lawrence D. Low, Security
J. V. Vinciguerra, Administrative
N. J. Donahue, Technical
Paul J. Hagelston, Technical

- * present all but first ten minutes of meeting
- ** sat in for last few minutes of meeting to hear summary

I summarized the SROO position on Hicksville, namely that we feel that it should be solely an SROO facility and that all "outside work" done there in the future should be placed under an Appendix C arrangement under Contract 1293. This proposal was not specifically tied in with the current problem on U-235 at Hicksville but it became quite evident that the tie in was there; much of the ensuing discussion therefore centered on the U-235 problem. Prior to Joe Clark's entrance into the meeting I was asked why NYOO should not take over Hicksville so that it would have responsibility for all Sylvania work. I pointed out that SROO considers Hicksville to be a part of its fundamental production chain strictly comparable, for example, to the 300 Area at BRP. I emphasized that so long as this condition persists our position will be that we cannot turn over responsibility for Hicksville but that when, as and if our production interest in Hicksville ceases we would probably wish to make other arrangements. Shortly after Joe Clark entered the meeting he asked the same question and was given the same answers and agreed with the wisdom of this viewpoint.

DEPARTMENT OF ENERGY - SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date: 4/8/03	Determination (Circle Number)
Authority: SAIC/DI/ADD	1. Classification Unchanged
Name: <u>Ballack</u>	2. Classification changed to:
2nd Review Date: 7/2/03	3. Classification Canceled
Authority: ADD	4. Other: CG-NMF-2 920
Name: <u>W. J. ...</u>	

UNCLASSIFIED

~~RESTRICTED DATA~~

~~This document contains Restricted Data as defined in the Atomic Energy Act of 1954 and the Atomic Energy Control Act of 1955. It is to be controlled in accordance with the provisions of these Acts.~~

~~SECRET~~

After a rather lengthy discussion of all the pros and cons of the total situation the following agreements were arrived at.

1. In the future all work at Hackville would be done under Contract 1293, with all outside work (work not being done for the SROO) accomplished under an Appendix C arrangement between the interested party and Sylvania but under the general provisions of Contract 1293. It was understood that it may be necessary and desirable that certain features of the administrative responsibility under SROO be taken care of, at SROO's request, by NYOO, e.g., Security, Health and Safety, Finance, etc. It was understood however that such features would be carried out as a service to SROO and action as indicated would be taken by SROO on the basis of NYOO recommendations.
2. As to the U-235 problem it was agreed that the basic responsibility for the preparation of the final report would rest with NYOO. SROO will prepare the SF report which would be incorporated by NYOO into its total report, issued by Merrill Eisenbud, sent to Blair for concurrence and/or correction and then issued.
3. Joe Clark pointed out that the report as outlined in 2. above will, of course, outline the reasons leading to the U-235 problem and must therefore include a summary of corrective action taken by both SROO and NYOO.

Basic reasons for the problem were agreed on as being (a) poor organization at Sylvania during the time the job was in progress, and (b) failure to follow instructions given by the Commission as per the feasibility report. For the purpose of applying corrective action it was agreed that a meeting would be held the following day with Kingston of Sylvania in order to convey our interpretation of the basic causes of the problem to him. Such a meeting was set up and is reported in a separate memorandum.

Merrill Eisenbud, manager at SROO, came into the meeting and the above points were summarized to him. He asked the question reported on above re why NYOO should not take over both Sylvania plants and was satisfied with the answers given to the others. He then agreed on all the above conclusions and recommendations.

cc: L. D. Low, Security
J. V. Vindiguerra, Administrative

Modification No. 12
Supplemental Agreement to
Contract No. AT(30-1)-1293

Modification No. 12

CONTRACTOR:

Sylvania Electric Products, Inc.
Bayside, Long Island, New York

SUPPLEMENTAL AGREEMENT TO:

Amend the contract to provide for
work for other Commission offices
or their cost-type Contractors, by
means of an Appendix "C" Agreement.

NARA II
RE 526
Accession 4NN 326-57-00.
AEC Tech Materials Div Cor. 194.
Box 38
1947

Modification No. 12
Supplemental Agreement to
Contract No. AT(30-1)-1293

THIS SUPPLEMENTAL AGREEMENT, effective as of 12:01 a.m., November 1, 1955, by and between the United States of America (hereinafter referred to as the Government), as represented by the United States Atomic Energy Commission (hereinafter referred to as the Commission); and Sylvania Electric Products, Inc., (hereinafter referred to as the Contractor);

WITNESSETH THAT:

WHEREAS, the Government and the Contractor, as of the 10th day of December, 1951, entered into Contract No. AT(30-1)-1293 for the performance by the Contractor of certain research and development work; and

WHEREAS, the parties desire to modify said contract, as heretofore modified, as hereinafter provided; and

WHEREAS, this supplemental agreement is authorized by the Atomic Energy Act of 1954;

NOW, THEREFORE, Contract No. AT(30-1)-1293, as heretofore modified, is hereby modified further in the following respects only:

1. Paragraph 2 of Article I - SCOPE OF THE WORK, is renumbered paragraph 3. The following new paragraph 2 is added to Article I.

"2. a. The work provided for in paragraph 1, above, is under the jurisdiction of the Commission's Savannah River Operations Office. This paragraph 2 is concerned only with such other cost-type work (if any) to be performed in the Hicksville plant, whether or not of the same type or character, as provided for in paragraph 1, above, as is agreed to by the Contractor and the Commission, or by the Contractor and a Sponsor (defined as a cost-type contractor of the Commission) with the written approval of the Commission, by execution of the document provided for in Appendix "C". Except to the extent otherwise specifically provided for in this contract, including the documents provided for in Appendix "C", all of the provisions of this contract shall be applicable with respect to work under this paragraph 2.

"b. Except as otherwise authorized by the Commission, it is understood that Commission or Sponsor agreements referred to in this paragraph 2 are the only vehicles whereby the Contractor may perform work as described in a, above, in the Hicksville plant.

"c. Prior to formal initiation of an Appendix "C" agreement with a Sponsor or Commission office, the Contractor shall notify the Commission's Savannah River Operations Office, in writing, of the scope of work and terms of the intended agreement."

NASA II
RG 326
Accession 44NN 326-87-005
AEC Prod Materials Div. Conv. 1949
Box 38
11/1/55

2. Subparagraph c of paragraph 1 of Article IV - CONSIDERATION, which reads,

"Payment for allowable costs as hereinafter provided.", is redesignated subparagraph d of said paragraph, and the following new subparagraph c is added to paragraph 1:

"c. With respect to the work provided for in each agreement adding work under paragraph 2 of Article I, the Contractor shall be paid the respective Fixed Fee stipulated in said agreement."

3. Add the following subparagraph to paragraph 5 of Article IV - CONSIDERATION:

"h. Payment of all costs and fixed fee under any Appendix "C" agreement shall be made to the Contractor by the Commission office or Sponsor executing the agreement in accordance with the provisions of said agreement."

h. Add the following subparagraph to paragraph 6 of Article IV - CONSIDERATION:

"c. The above provisions of this paragraph 6 establishing estimates and obligating funds do not include any work added under paragraph 2 of Article I. In connection with each agreement adding work under paragraph 2 of Article I, the Commission in the case of a Commission agreement, and the Sponsor in the case of a Sponsor agreement, will obligate (if the Commission) or allocate (if a Sponsor) in regard to the work provided for in the said agreement, the sum therein specified."

5. Paragraph 1 of Article VII - PATENTS is amended to read as follows:

"1. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of, in connection with, or under the terms of this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed; and to determine the disposition of the title and rights under any application or patent that may result; provided, however, that with respect to such inventions or discoveries made or conceived in the course of, in connection with, or under the terms of paragraph 1 of Article I, the Contractor, in any event, shall retain at least a nonexclusive, irrevocable, royalty-free license under said invention, discovery, application, or patent, such license being limited to the manufacture, use and sale for purposes other than use in the production or utilization of special nuclear material or atomic energy. Subject to the license retained by the Contractor, as provided in this Article, the judgment of the Commission on these matters shall be accepted as final; and the Contractor for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

NAPA II
EG 326
Accession 44NN 326-87-00
AEC Prod. Materials Div. G.W. 194
Box 29

IN WITNESS WHEREOF, the parties hereto have executed this Supplemental Agreement as of the day and year first above written:

UNITED STATES OF AMERICA

By: UNITED STATES ATOMIC ENERGY COMMISSION

/s/ R. S. ...

Witnesses:

/s/ Jennie K. Bronthers

RFD 5 - Huntington, N. Y.
(Address)

/s/ Beatrice E. Kalmus

199-04 24 Road, Bayside, N. Y.

PENNSYLVANIA ELECTRIC PRODUCTS, INC.

By: /s/ W. E. Kingston

W. E. Kingston, General Manager
Title: Atomic Energy Division

I, William F. Rueger, certify that I am the Asst. Secretary of the corporation named as Contractor herein; that W. E. Kingston who signed this contract on behalf of the Contractor was then General Manager of said corporation; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

IN WITNESS WHEREOF, I have hereunto affixed by hand and the seal of said corporation.

/s/ William F. Rueger

(Corporate Seal)

NARA II
EG 326
Accession 44NN 326-87-00
AEC Form Materials Div. Corr. 44
Box 38

3868

SPONSORED TASK NO. CH-1
MODIFICATION NO. 1

CONTRACT AT (16-1)-129

APPENDIX C

WORK UNDER PARAGRAPH 2 OF ARTICLES

THIS Modification entered into this 11th day of August 1959, between the Contractor and the Sponsor, is a part of the contract between them, dated August 17, 1959, concerning the final machining of semi-finished Mark VII-A cores at full capacity in accordance with authorization from Mr. C. L. Karl, Manager of the Commission's Fernald Area Office.

WITNESSETH

WHEREAS, the parties hereto have heretofore entered into a certain agreement between them, dated August 17, 1959, concerning the final machining of semi-finished Mark VII-A cores at full capacity in accordance with authorization from Mr. C. L. Karl, Manager of the Commission's Fernald Area Office, such agreement having been entered into on July 1, 1959;

WHEREAS, the parties hereto desire to modify said Agreement, as here is provided;

NOW THEREFORE, the Contractor and the Sponsor do mutually agree as follows:

1. The following new subparagraph is added to paragraph 1 - Description of Work:
Effective August 17, 1959, the Contractor shall proceed on final machining of semi-finished Mark VII-A cores at full capacity in accordance with authorization from Mr. C. L. Karl, Manager of the Commission's Fernald Area Office.
2. The fixed fee specified in paragraph 3 is increased by \$12,985. as a result of the work added hereby.
3. The completion date of the work stated in paragraph 4 is changed to December 31, 1959.
4. The amount obligated by paragraph 5 is increased by \$229,197. as a result of the work added hereby. The revised amount of the Agreement is now as follows:

	Estimated Cost	Fixed Fee	Total
Basic Agreement	\$77,090.-	\$1,625.-	\$78,715.-
This Modification No. 1	216,212.-	12,985.-	229,197.-
Revised Total	293,302.-	17,610.-	310,912.-

CONTRACTS
500

CERTIFIED TRUE COPY

BY *[Signature]*

NARA II
RG-326
REF ID: A66322

NARA 001285

Except as otherwise provided in this modification, all provisions of the agreement as herebefore modified or supplemented shall remain in full force and effect.

DATA DEVELOPMENT AGREEMENT

1947-1950

PROJECT: [Illegible]

1947-1950

Glenn Brown

NARA II
EG 326
Accession 4NN 326-87-007
AEC Feed Materials Div. Com. 1947
Box 19

NARA 001286

James H. King, Director, Budget and Finance
Division, Savannah River Operations Office

JUL 23 1959

L. D. Mackey, Director of Finance, Oak Ridge

SYLOR - COSTING NUCLEAR CONTRACTS - 1959

SYNOPSIS: APPROVED

As you are aware, an agreement was reached between the Savannah River Operations Office and the Fernald Area Office to permit the Fernald Area Office to perform auxiliary plant maintenance work. The agreement provides that the Fernald Area Office will be required to maintain separate accounting records for this work at this time.

1. Invoices will be submitted to the Fernald Area Office for administrative approval and will be paid by the Atomic Energy Commission, Oak Ridge.
2. Since NLD has provided for these costs under their operating budget, the cost will be transferred by AEC-ORO to NLD as a 325 fund transfer and identified under the proper cost-budget activity.
3. In order to associate these costs with the finished product shipped by Syloco to SROO, NLD will transfer these costs to Syloco as an AEC Form 325 product cost transfer after receipt of the transfer mentioned in 2, above. It should be noted that it will not be possible for NLD to reference this transfer to a shipping document (AEC Form 101) but instead, will identify the costs by Syloco invoice number.

Please advise if the above proposal meets with your approval.

L. D. Mackey
L. D. Mackey

CC: C. L. Karl, Area Manager, Fernald Area Office (2)
J. W. Ruch, Director, Feed Materials Division

CONTRACTS
Exploratory

J. W. Ruch

INARA II
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ANN 325-57-007
AEC Form 325-57-007
OR 1959

SYL00051137

OFFICE MEMORANDUM - UNITED STATES GOVERNMENT

Date: January 23, 1956 ✓

FROM : R. G. Blair, Manager
Savannah RiverSUBJECT: PLACING WORK UNDER CONTRACT NO. AT(30-1)-1293 WITH SYLVANIA
ELECTRIC PRODUCTS, INC., AT THE HICKSVILLE PLANT

SYMBOL : AG:JVV:mep

The subject contract has recently been amended by the attached Modification No. 12 to permit other Commission offices or their cost-type contractors (the latter referred to as Sponsors) to place work directly with Sylvania at the Hicksville Plant through the medium of the attached Appendix "C" agreement form.

Each Appendix "C" arrangement will be subject to a priority for SROO work under this contract.

Unless otherwise agreed, SROO reserves the responsibility for SS.. Accountability, Financial Accounting and Auditing, Security, Property, Health and Safety and other administrative responsibilities in connection with each such Appendix "C" arrangement.

The following procedures will be followed in the placing and handling of such non-SROO work under the contract:

1. In accordance with paragraph 2.c. of Article I in Modification No. 12 to Contract No. AT(30-1)-1293, Sylvania Electric Products, Inc., shall notify SROO in writing of the terms and conditions of each proposed Appendix "C" agreement between Sylvania and the Commission or Sponsor. SROO will promptly notify the responsible Commission office of its concurrence or of any circumstances or conditions which make it inadvisable for them to execute or approve the agreement.
2. The responsible Commission office will notify SROO of the supporting services which the responsible Commission office wishes to supply.

NARA II

EG 586

Accession 444N 326-87-00.

AEC Ford Mod. Div. Corr. 1948

Box 38

* 1/24/44

Date: January 23, 1956

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3. Upon execution by all parties, a conformed copy of the agreement shall be furnished to SROO by the responsible Commission office. At the same time the names, business locations, and telephone numbers of the Commission and sponsor liaison personnel to be contacted, if necessary, shall be forwarded. The SROO liaison personnel are identified in the attached paper.
4. Each modification of an agreement is to be processed in the same manner as the agreement.
5. Unless otherwise agreed, SROO will not be responsible for the technical aspects or the classification of the work under any of the agreements; for example, our procurement services, if requested, will not entail any exercise of judgment on the part of SROO concerning the technical need or sufficiency of an item of equipment to be purchased for the work.
6. Each Appendix "C" agreement with a Commission office is to provide that obligations will be recorded and payment for work performed will be made directly to Sylvania by the Commission office executing the agreement. In the case of sponsor agreements, billings and payments will be handled directly between Sylvania and the sponsors.

Enclosures:

1. Appendix "C" - Mod. No. 12
2. List of SROO Liaison Personnel

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SPONSORED TASK NO. CH-4
MODIFICATION NO. 12

DEC 26 1962

CONTRACT AT-(30-1)-1293

APPENDIX "C"

WORK UNDER PARAGRAPH 2 OF ARTICLE I

THIS MODIFICATION, entered into as of the 19th day of December, 1962, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC., SYLCOR DIVISION (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into a certain agreement known and designated as Sponsored Task CH-4 (hereinafter called the "Agreement"), such Agreement having been entered into on July 1, 1959, and having been modified heretofore by Modifications Nos. 1 - 11; and

WHEREAS, the parties hereto desire to modify said Agreement further as herein provided;

NOW, THEREFORE, the parties hereto agree that the Agreement, as heretofore modified, is hereby modified further in the following particulars, but in no others:

1. The following new subparagraph is added to Paragraph 1, Description of Work:

"Notwithstanding the preceding subparagraph, during the period December 1, 1962, through January 31, 1963, the Contractor shall proceed with the final machining of semifinished Mark VII-A cores and the close-out activities required to complete Sponsored Task CH-4, as heretofore provided in the Agreement and in accordance with the Contractor's letter dated November 30, 1962, and the letter dated November 27, 1962, from C. L. Karl, Area Manager of the Commission's Cincinnati Area Office to the Contractor, which letters are hereby incorporated herein by reference."

2. The fixed fee specified in Paragraph 3 is hereby increased by \$1,210.00 as a result of the work added thereby.

3. The completion date of the work stated in Paragraph 4 is changed to January 31, 1963.

NARA-SE
Series 16-Oak
Ridge Contract
Files
Box 4-172-18

NARA 001816

4. The amount obligated by Paragraph 5 is increased by \$21,390.00 as a result of the work added thereby. The revised amount of the Agreement is now as follows:

	<u>Estimated Cost</u>	<u>Fixed Fee</u>	<u>Total</u>
Obligated thru Modification No. 11	\$1,165,802.00	\$71,774.00	\$1,237,576.00
This Modification No. 12	<u>20,180.00</u>	<u>1,210.00</u>	<u>21,390.00</u>
	\$1,185,982.00	\$72,984.00	\$1,258,966.00

Except as otherwise provided in this modification, all the provisions of the Agreement as heretofore modified or supplemented shall remain in full force and effect.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS OFFICE

BY: [Signature]

TITLE: [Title]

WITNESSES:

[Signature]

[Signature]
(Address)

[Signature]

[Signature]
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.
SYLCOR DIVISION

BY: [Signature]

TITLE: Manufacturing Manager

Roland A. Anderson, Assistant General
Counsel for Patents, Germantown

January 18, 1963

Randall G. Erdley, Chief
Savannah River Patent Group

MODIFICATION NO. 12 TO SPONSORED TASK NO. CH-4 UNDER
CONTRACT AT(30-1)-1293

CP:RGE:cm

This is to advise that by the subject modification effective
December 15, 1962 the fixed fee has been increased by
\$1,210.00 from \$71,774.00 to \$72,984.00 and the completion
date of the work has been extended to January 31, 1963. -

OFFICE ▶	Patent Br.					
SURNAME ▶	RGE.					
DATE ▶	1-18-63					

Form AEC-318 (Rev. 9-63)

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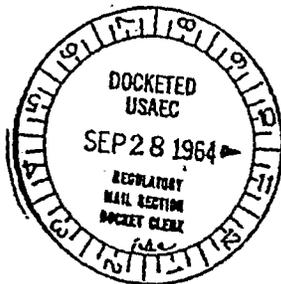
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RENEWAL APPLICATION
of
SNM 82 LICENSE
for
SYLOR DIVISION
of
SYLVANIA ELECTRIC PRODUCTS INC.



4670

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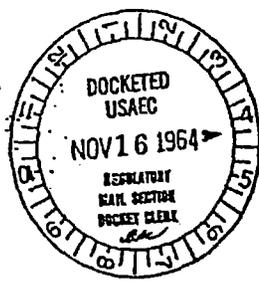
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- Appendix E - Criticality Limit Report
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- Appendix G - Container Testing

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 REGULATORY DIVISION
 1500 21ST ST
 WASHINGTON, D.C. 20545

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 U.S. ATOMIC ENERGY COM.



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R-1

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This petition for the renewal of Special Nuclear Material License Number 82 is requested because the Sylcor Division of Sylvania Electric Products Incorporated wishes to continue to receive, handle and process uranium, enriched with the isotope U-235, from 90% to full enrichment. The procedures contained in this renewal application apply to both license and accountability station material.

I. CORPORATE STRUCTURE

The Sylcor Division of Sylvania Electric Products Inc., incorporated in the State of Delaware, which is a wholly owned subsidiary of the General Telephone and Electronics Corporation, a New York State Corporation, herein petitions for the renewal of its special nuclear materials license SNM 82. There are no foreign interests or affiliates that exercise any control over the operation of the corporation.

For financial responsibility see General Telephone & Electronics Corporation's Annual Report, Appendix A.

Hereinafter, this corporate entity will be referred to as "Sylcor". The Sylcor Division is located at Centiague Road in the town of Hicksville, County of Nassau in the State of New York.

A. Corporate Officers and Sylcor Management

The following identifies the corporate officers and Sylcor management personnel.

1. Corporate Officers

	<u>Business Address</u>	<u>Home Address</u>
<u>President</u>		
Gene K. Beare	730 Third Avenue New York, N. Y.	5 Salem Straits Darien, Conn.

I.A.I.

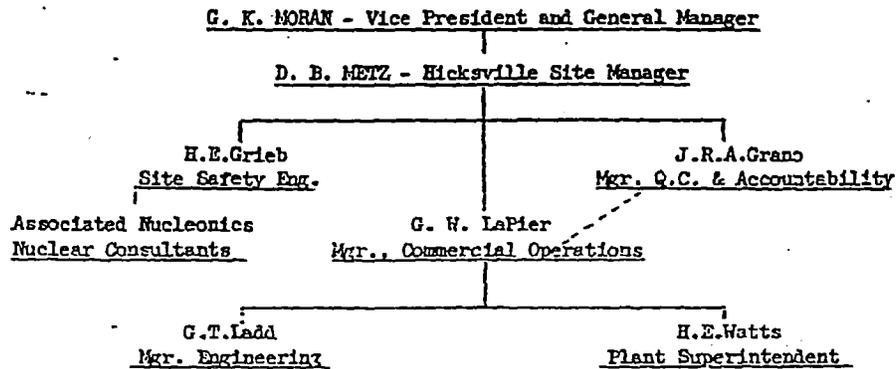
	<u>Business Address</u>	<u>Home Address</u>
<u>Senior Vice Presidents</u>		
Henry F. Callahan	60 Boston Street Salem, Mass.	23 Flax Pond Road Lynn, Mass.
George C. Connor	730 Third Avenue New York, N. Y.	100 Valley Road Larchmont, N. Y.
Leon C. Guest, Jr.	730 Third Avenue New York, N. Y.	Stony Brook Rd. So. Darien, Conn.
Frank J. Healy	60 Boston Street Salem, Mass.	26 Harbor Avenue Marblehead, Mass.
Merle W. Kremer	Seneca Falls, New York	46 State Street Seneca Falls, N.Y.
Henry Lehne	63 Second Avenue Waltham, Mass.	36 Pinecroft Rd. Weston, Mass.
Arthur C. Viebranz	730 Third Avenue New York, N. Y.	49 Eaton Road Larchmont, N.Y.
<u>Vice President, General Counsel and Secretary</u>		
William F. Rueger	730 Third Avenue New York, N. Y.	55 Middlecamp Rd. Westbury, N.Y.
<u>Treasurer</u>		
Walter R. Seibert	730 Third Avenue New York, N. Y.	105 Brookside Rd. Darien, Conn.
<u>Controller</u>		
Douglas L. Hamilton	730 Third Avenue New York, N. Y.	601 Fort Hill Rd. Scarsdale, N.Y.

2. Sylcor's Management Personnel

G. L. Moran (Vice President of Sylvania)	General Manager
D. B. Metz	Hicksville Site Manager
Grant W. LaPier	Plant Manager, Commercial Operations

I.A.2. John R. A. Grano Manager of Quality Control and Accountability
 Henry E. Grieb Safety Engineer
 George T. Ladd Manager of Commercial Product Engineering
 Herbert E. Watts Plant Superintendent

MANAGEMENT ORGANIZATION CHART



Sylcor's management and technical staff, as shown above, has an accumulated experience of more than 80 years in the handling and processing of fissile materials. Sylvania Electric Products Inc. has been continuously involved with the processing of uranium since 1945. Since 1959, Sylcor has handled some 2800 kg. of U-235 in its various forms for the fabrication of nuclear fuel elements and other supplementary reactor components. This application for license renewal is based on this experience.

3. Biographies of Sylcor's Management Personnel

On the following pages are individual biographies of the on-site, key management personnel. These individuals are responsible for the Sylcor Commercial Operation.

D. BOYD METZ

MANUFACTURING MANAGER

Mr. Metz attended Pennsylvania State College, majoring in Metallurgy. Later, he took a series of courses in Industrial Management at Adelphi College. Mr. Metz has filled a number of increasingly responsible positions during the twenty-three years he has been on the Sylvania Electric Products Inc. staff. A portion of this time, he was employed by the Electronic Tube Division and then with the Chemical and Metallurgical Division.

During this period, he was assigned an area of responsibility in the development of the VT fuse. In 1947, in conjunction with Sylvania's expanded interest in the nuclear fuel field, Mr. Metz was transferred to this area. His responsibility was electromicroscopy, physical testing and general laboratory administration for Sylvania's earlier nuclear energy programs.

He was instrumental in the setting up of the original nuclear fuel facilities at Hicksville. Out of this original unit at Hicksville has grown the present Sylcor Division of Sylvania Electric Products Inc.

Mr. Metz is presently Manufacturing Manager of Sylcor, and is responsible for the weapons program as well as the commercial operation.

Mr. Metz is a member of the Society for Advancement of Management, American Management Association and American Society for Metals.

GRANT W. LAPIER

PLANT MANAGER, COMMERCIAL OPERATIONS

Mr. LaPier received technical training at Case Institute of Technology, Western Reserve University and Penn College.

Mr. LaPier joined Sylcor in 1959 as Manager of the Commercial Plant. He is responsible for all phases of Sylcor's non-weapons work.

Before joining Sylcor, Mr. LaPier was associated with the Clevite Corporation. His twenty-one years of experience with Clevite includes fifteen years of experience in management as Shop Foreman, Department Head and Plant Manager of the Aircraft Bearing Plant of the Cleveland Graphite Bronze Company, the predecessor company to Clevite Corporation, and three years experience in production, marketing and development of nuclear fuels.

While employed as Plant Manager of the Commercial Operation for Sylcor, Mr. LaPier has been responsible for the production of over 5000 elements in the research and test reactor field. This responsibility, coupled with his past experience at Clevite, gives him an extremely broad knowledge in the handling of enriched uranium.

Mr. LaPier is a member of the American Society for Metals, American Management Association, American Nuclear Society and Atomic Industrial Forum.

JOHN R. A. GRANO

MANAGER OF QUALITY CONTROL AND ACCOUNTABILITY

Mr. Grano is Sylcor's Manager of Quality Control and Accountability. His education background comprises . . a B.A. degree in Pure Science at New York University, a M.S. degree in Applied Statistics and Quality Control at Rutgers, and additional studies at Columbia University and the New York University Management Institute.

Mr. Grano has over sixteen years of management level quality control experience in government, industry and research, involving prime responsibility for supervising, planning and control of quality of all items purchased by the Armed Forces and other varied consumer and industrial items. In addition, he has served as a consultant in assisting industrial, development and research organizations in the designing and the analysis of experiments and projects for improving . . . the quality and design of products and their production output.

He is a member of the American Society for Quality Control (having been an officer), the American Statistical Association and The American Society for Metals.

HENRY E. GRIEB

SAFETY ENGINEER

Mr. Grieb has had the responsibility for the Health and Safety programs of the organization since 1949. During that time, he has been Sylcor's representative in dealing with Health and Safety personnel of the United States Atomic Energy Commission.

Mr. Grieb has directed health and safety programs for projects involving U-235 in its full range of enrichments and in various alloy and powder forms.

From the health and safety point of view, Mr. Grieb has participated in the design and layout of equipment and establishment of procedures used on projects involving research and development of production of nuclear fuels.

Mr. Grieb is also responsible for the supervision of Sylcor's non-nuclear health and safety programs.

Mr. Grieb is a member of the American Society of Safety Engineers, American Industrial Hygiene Association and the National Fire Protection Association.

GEORGE T. LADD

MANAGER OF COMMERCIAL PRODUCT ENGINEERING

Mr. Ladd received a B.S. degree in Metallurgical Engineering from Case Institute of Technology and later carried on graduate work in Mechanical Engineering at Stevens Institute of Technology and Columbia University.

Mr. Ladd joined Sylcor in 1960 as Assistant Manager of Production Engineering and is concerned with engineering and design problems in fuel element manufacture.

From 1938 to 1949, he was employed as an Engineer with the Curtiss Wright Corporation, starting as Metallurgist in the Material Laboratory and held successive positions as Chief Foundry Metallurgist, Development and Project Engineer and Project Manager.

From 1949 to 1959, Mr. Ladd was with Packard Engine and Airplane Corporation as Chief Engineer of the Al-Fin Division and later as Staff Assistant to the Vice President of the Engine Division.

Since 1960, Mr. Ladd has been directly involved in all phases of engineering, from design concept through processing operations, required in the fabrication of some 7500 fuel elements for approximately 40 reactors.

Mr. Ladd is a member of The American Society of Mechanical Engineers, American Society for Metals and American Society of Automotive Engineers.

HERBERT E. WATTS

PLANT SUPERINTENDENT

Mr. Watts received his technical training at the United States Merchant Marine Academy, graduating in 1951 with a B.S.M.E. and holds a steam and diesel engineer's license. He continued his studies doing graduate work at Columbia University in Metallurgy. He served as a Lieutenant in the Navy during the Korean War working in the nuclear field. He is currently taking Business Administration work at C.W. Post.

During the time spent with Sylvania, he has worked as an engineer with responsibilities for Quality Control and Inspection, setting up and operating the metallurgy laboratory, and a Process Control group. He was responsible for production engineering and the mechanization of a fuel element line. Mr. Watts now heads up the manufacturing unit in the Commercial Plant as Plant Superintendent.

Mr. Watts is a member of the American Society of Mechanical Engineers, the American Society for Metals and the American Management Association.

I. B. Responsibilities

1. Production Personnel

Production personnel have the basic responsibility for following the rules and procedures for fuel production operations outlined in this license application. Supervisors are responsible for training their personnel in these procedures and enforcing them.

2. Accountability Personnel

Accountability representatives have the responsibility for receiving material, storage and subdividing it into control batch sizes, as per Appendix B. They maintain detailed records of all batch weighings and the quantity and form of material on site. Any change in the number of pieces within a batch must be made by an accountability representative.

3. Health and Safety Personnel

The Health and Safety Department has the responsibility for performing periodic inspections to determine compliance with all the procedures of this license, and to report any infractions to Company Management, as well as to perform the routine monitoring functions specified in Section V, Health and Safety and the Emergency Procedures, Appendix C.

Health and Safety reports to the Site Manager and has the overall site responsibility for the industrial and nuclear safety, health physics and industrial hygiene programs as outlined in this application.

I. C. Nuclear Consultants

The Sylcor Division has employed Associated Nucleonics, Inc. of Garden City, Long Island, New York, as nuclear consultants. Their function will be to perform nuclear safety inspections three times per year, and provide a consultant service for special criticality problems. Personal data pertaining to the two (2) men from Associated Nucleonics, Inc. who will be directly involved, is as follows:

1. Kenneth E. Diehl - B.Ch.E.

Consulting Engineer with Associated Nucleonics, Inc. for twelve (12) years. He assisted in plant evaluation and process design relating to research, test, power and aircraft reactors.

The following is a partial list of programs that he has been involved with:

- Food Irradiation Facility (U.S. Army Quartermaster Corps.)
- Gamma Irradiation Facility (U.S. Atomic Energy Commission)
- Low Capacity Nuclear Power Plant (U.S. Atomic Energy Comm.)
- CANEL Test Reactor (Pratt & Whitney Aircraft Co.)
- A.N.P. Program (Pratt & Whitney Aircraft Co.)

Mr. Diehl will perform unannounced nuclear safety inspections three (3) times per year. A formal report will be made to Sylcor management of his findings.

2. Robert J. Herbert - B.Sc. in Ch.E.

Mr. Herbert has had graduate training at:

- Union College - Nuclear Reactor Theory
- General Electric Co. - Advanced Process Technology Program

I.C.2.

Mr. Herbert is a Staff Engineer with Associated Nucleonics and is a member of the American Nuclear Society. The following is a partial list of programs that he has been associated with:

Rocky Flats - Nuclear Fuel and Processing Plant Criticality and shielding problems.

Consultant to Alco Products Inc., Nuclear Products Division for the nuclear characteristics of a proposed 10 MWT graphite moderated, gas cooled, fully enriched reactor.

Performed as staff member of the AEC and Maritime Commission Evaluation Committee to evaluate proposals from major contractors for the second nuclear-powered commercial ship.

Perform nuclear and engineering analyses for a number of proposed reactor systems, such as small reactors for naval and remote area applications, organic reactors for power and testing, and sodium-deuterium reactors.

Developed nuclear calculation methods including criticality and lifetime characteristics of well-moderated reactors.

Mr. Herbert will perform the nuclear safety consulting services for special problems.

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SYL00083403

SECTION II
SITE & BLDG. LOCATION

SYL00083404

II. SITE AND BUILDING LOCATIONS

All activities as stated in Sections IV through VII are confined to the facilities at Hicksville, County of Nassau, in the State of New York. The following are schematic drawings of the site and a description of the Commercial facility. Also listed is the maximum permissible U-235 per building.

Figure 1, Page 14 Indicates the location of the Sylcor site in relationship to the surrounding area.

Figure 2, Page 15 Indicates the location of all buildings and facilities of the Sylcor Division on Cantiague Road in Hicksville, New York.

Figure 3, Page 16 Indicates the general floor and site layout of the Commercial operations.

A. Operations by Buildings

1. Building #2 Figure 4, Page 17

One segregated room is used in this building for special melting operations. Melts containing nuclear poisons or other special materials are made here. The purpose is to maintain rigid contamination control. The maximum U-235 in this melting room is 4 Kg.

2. Building #10 Figure 2, Page 15

This building is used for storage only. The maximum quantity of U-235 stored in building 10 is 150 kg. of high enrichment (90% or greater) or 5,000 kg. of low enrichment (5.0% or less).

3. Building #12 Figure 2, Page 15

This building is used for isostatic pressing. Only the

U-235

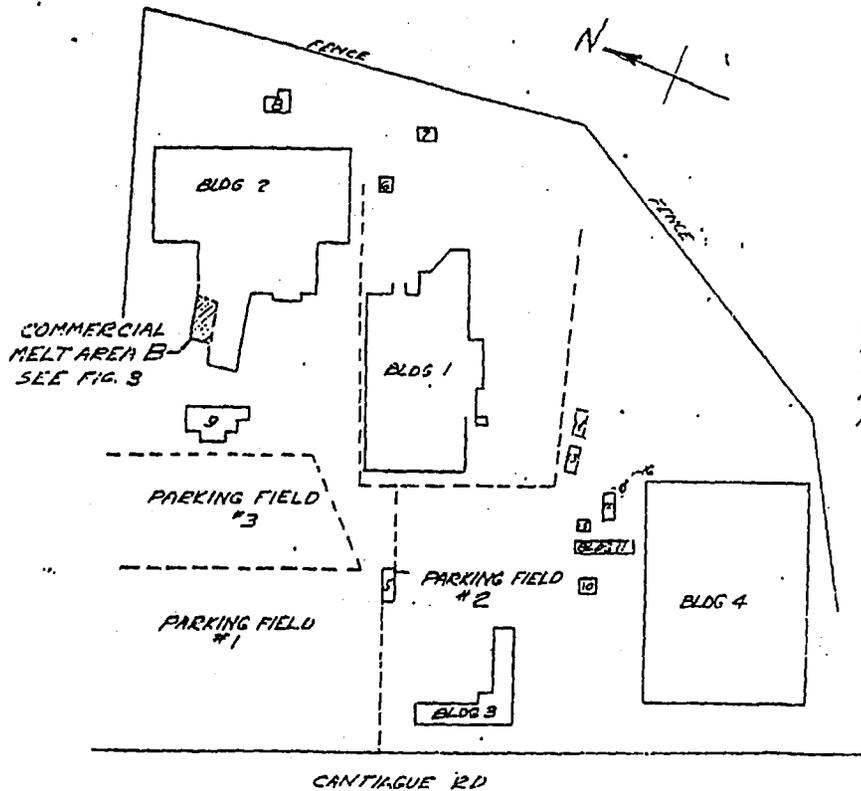
DO NOT SCALE DIMENSIONS TO FIGURES
TOLERANCES UNLESS OTHERWISE SPECIFIED
SEC. DIMS. 1 FRAG. DIMS. 2 ANGULAR DIMS. 3

DRAW PUNCH COMMERCIAL STOCK
SIZES AND MANUFACTURERS'
TOLERANCES ARE NOT INCLUDED.

REMOVE ALL
BURRS AND
SHARP EDGES

NUMBER
B33533

ISSUE:



- LEGEND**
1. AEC ADMINISTRATION & PRODUCTION
 2. AEC & COMMERCIAL PRODUCTION
 3. COMPANY ADMINISTRATIVE OFFICES
 4. COMMERCIAL PRODUCTION
 5. MAIN GUARD HOUSE
 6. SOLVENT & OIL STORAGE
 7. PUMP HOUSE
 8. BURNING & CHEMICAL PROCESSING
 9. FARM HOUSE
 10. SPECIAL NUCLEAR MATERIAL STORAGE (LONG TERM)
 11. GAS STORAGE
 12. ISOSTATIC PRESSING
 13. SPECIAL NUCLEAR MATERIAL STORAGE
 14. CONCRETE STORAGE PAD
 15. UTILITY SHED
 16. FIRE HYDRANT & HOSE HOUSE

FIG. 2 - DIAGRAM OF HICKSVILLE SITE

REQ.	DESCRIPTION	REV.	DWG NUMBER	TITLE	NEXT ASSEMBLY
MATERIAL				NAME SYLOR SITE LAYOUT	
HEAT TREATMENT				HICKSVILLE, N.Y.	
FINISH				SYLVANIA ELECTRIC PRODUCTS INC.	
				Sylcor Division HICKSVILLE, N.Y. FIG. 2	
AGE APPR.	DRAWN BY	CHECK BY	SCALE	NUMBER	
DATE	FIG. APPR.	DWG. APPR.		B33533	

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SYL00083406

DO NOT SCALE DIM. WORK TO FIGURES
TOLERANCES UNLESS OTHERWISE SPECIFIED
SEE DIM. 2 PHAS. DIM. 1 ANGULAR DIM. 2

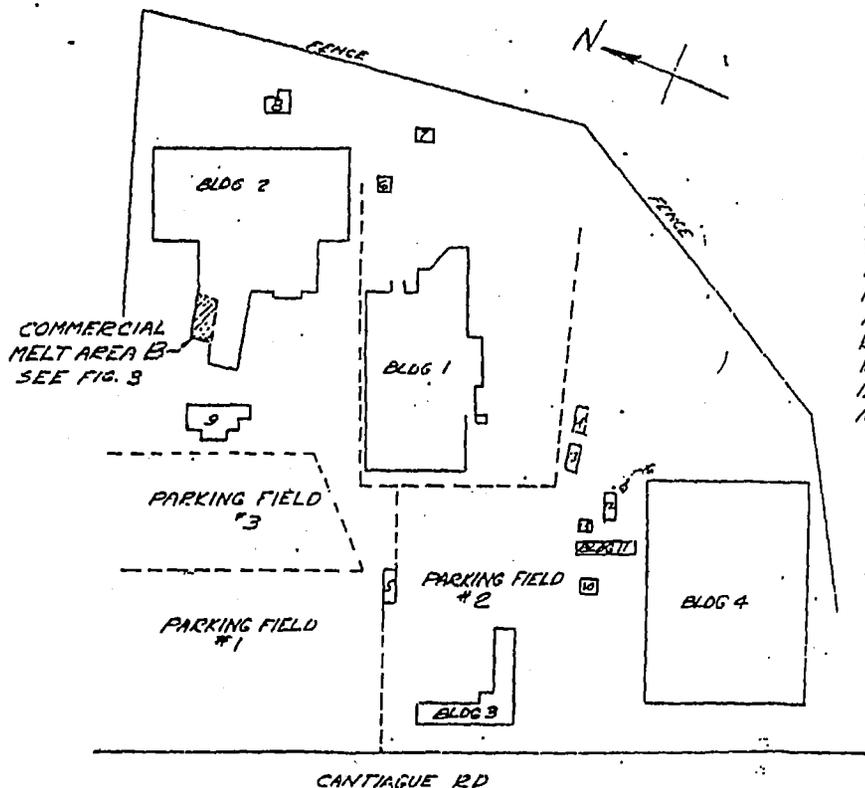
DRILL PUNCH COMMERCIAL STOCK
SIZE AND MANUFACTURER'S
TOLERANCES ARE NOT INCLUDED.

REMOVE ALL
BURRS AND
SHARP EDGES

NUMBER

B33533

ISSUE:



LEGEND

1. REC ADMINISTRATION & PRODUCTION
2. REC & COMMERCIAL PRODUCTION
3. COMPANY ADMINISTRATIVE OFFICES
4. COMMERCIAL PRODUCTION
5. MAIN GUARD HOUSE
6. SOLVENT & OIL STORAGE
7. PUMP HOUSE
8. BURNING & CHEMICAL PROCESSING
9. FARM HOUSE
10. SPECIAL NUCLEAR MATERIAL STORAGE (LONG TERM)
11. GAS STORAGE
12. ISOSTATIC PRESSING
13. SPECIAL NUCLEAR MATERIAL STORAGE
14. CONCRETE STORAGE PAD
15. UTILITY SHED
16. FIRE HYDRANT & HOSE HOUSE

PAGE 15

FIG. 2 - DIAGRAM OF HICKSVILLE SITE

QTY	DESCRIPTION	UNIT	QTY NUMBER	ITEM	RECT ASSEMBLY
	MATERIAL		SYLOR SITE LAYOUT HICKSVILLE, N.Y.		
	HEAT TREATMENT		SYLVANIA ELECTRIC PRODUCTS INC. Sylcor Division Hicksville, N.Y. FIG. 2		
	FINISH				
REC APPR.	DESIGN BY	DRAWN BY	SCALE	NUMBER	
DATE	DATE APPR.	DATE DES.		B33533	

SYL00083407

II.A.3. necessary for immediate processing is brought into this building, there is no storage. The maximum quantity of U-235 in building #12 at one time will be 4 kg.

4. Building #4

98% of the fuel fabrication work is carried out in building #4. (See Figure 3, Page 16) Building #4 also contains the accountability-storage areas. The maximum quantity of U-235 contained in building #4 will be 700 kg. of highly enriched (90% or greater) and 5,000 kg. of low enrichment (5% or less).

NOTE: The part of Sylon serving as an A.E.C. facility for fabrication of S.R.P. fuel, is completely separated from Sylon's Commercial Operation. Two independent and physically separated accountability areas are maintained. The A.E.C. Facility occupies buildings #1, 2 (except area "B"), 6, 7, and 8. (See Figure 2, Page 15)

SECTION 111
TYPES 3MM PROCESSED

III. TYPES OF SPECIAL NUCLEAR MATERIALS TO BE PROCESSED

Sylcor will be processing uranium enriched with the U-235 isotope, from 90% to full enrichment, and low enrichment up to 5.0%. The enriched uranium will be as U metal, U alloy with various other metals, U oxides, or U carbides (the last two materials will be referred to as U ceramics). There are no immediate plans for working with Pu-239, U-233 or other fissile materials. Should such a need occur in the future, this license application will be amended accordingly.

A. Uranium Forms

1. Metal/Alloy Forms

Virgin U (as received from processor)
Virgin or Alloy Rods or Plates
Alloyed Ingots
Slabs (rolled ingots)
Cores (punched from slabs)
Remeltable Alloy (scrap from core punching and cropping of ingots, etc.)
Fuel Plates (cores, clad by rolling)
Fuel Plates assembled in fuel elements

2. Powder (Ceramic or Cermet Forms)

Uranium cermets (as powder or pellets)
Uranium cermets plus metal powder (blended or compacted)
Uranium cermets plus metal powder as cores
Fuel plates (cores, clad)
Fuel plates assembled into fuel elements

III. B. The estimated annual requirements for enriched uranium expressed as kg. of U-235 are as follows:

<u>Metal/Alloy</u>	-	1250 kg. of U-235
<u>Cerrets</u>	-	600 kg. of U-235 90% or over (high enrichment)
		10,000 kg. of U-235 5.0% or under (low enrichment)

At any given time for the forms listed above, it is anticipated that the following amounts may be at the site:

<u>Metal/Alloy</u>	-	650 kg. of U-235 (high enrichment)
<u>Cerrets</u>	-	200 kg. of U-235 90% or over (high enrichment)
		5,000 kg. of U-235 5.0% or under (low enrichment)

These amounts are cumulative for both license and station uranium.

Approximately 100 kg. of high enrichment U-235 and 1,000 kg. of low enrichment U-235 will be handled on a daily basis. Different enrichments are separately processed and stored.

SECTION IV
FABRICATION PROCESS

IV. FABRICATION PROCESS

A description of the operating steps which may be performed in the fabrication of fuel, and the forms of special nuclear material which will be used is as follows.

NOTE: Those operations having an asterisk (*) after them generate scrap and/or have potential U losses.

A. Melting*

1. Process - Vacuum or air melting of uranium and uranium-containing alloys, and casting of these melts into one or more ingots.
2. Equipment - Vacuum melting furnaces, air melting furnaces, associated crucible molds and vacuum equipment.
3. Types of material - Melt charges (U as pellets, broken buttons or remeltable alloy, alloying metals) and poured ingots.

B. Size Reduction*

1. Process - Both hot and cold reduction (rolling, swaging or forging) of uranium and uranium-containing alloys (clad or unclad) into strips, plates or other shapes.
2. Equipment - Rolling mills, swagers, forges, roller levelers and similar types of equipment.
3. Types of material - Ingots, slabs and plates.

C. Shearing*

1. Process - Shearing of uranium or uranium-containing alloys (clad or unclad) to the desired dimensions such as shearing ingot slabs prior to punching or for trimming finished fuel plates to size.

- IV.C. 2. Equipment - Hand or power shears and presses.
- 3. Types of material - Slabs, plates and scrap.

D. Radiography

- 1. Process - Radiographic and fluoroscopic examination of slabs and plates. Rolled plates may also be marked for subsequent operations while on the fluoroscope.
- 2. Equipment - X-ray units.
- 3. Types of material - Slabs, cores or plates.

E. Punching*

- 1. Process - Cutting out pieces of uranium or uranium-containing alloys to produce cores or pieces for analysis.
- 2. Equipment - Presses.
- 3. Types of material - Ingots, slabs and scrap.

F. Degreasing*

- 1. Process - Cleaning of uranium or uranium-containing alloy by liquid or vapor degreasing.
- 2. Equipment - Degreasers.
- 3. Types of material - Ingots, slabs, cores, scrap, plates or finished elements.

G. Press Brake

- 1. Process - Blanking of fuel plates, forming of fuel plates to shape and for other general purpose pressing, forming and flattening.
- 2. Equipment - Press brake.
- 3. Types of material - Cores and plates.

IV. H. Welding

1. Process - Welding of cladding material (cover plates) to picture frame in fuel plate assembly, and the welding of end fittings, handles and other such items.
2. Equipment - Gas, arc, spot, electron beam and inert gas shielded electrode welding apparatus.
3. Types of material - Clad plates and fuel assemblies.

I. Heating*

1. Process - Heating of uranium or uranium-containing material prior to size reduction or for heat treating.
2. Equipment - Furnaces, salt baths, oil baths and vacuum retorts.
3. Types of material - Ingots, cores and plates.

J. Numbering

1. Process - Stamping of plates and other parts with identification numbers.
2. Equipment - Hand numbers, presses or engraving equipment.
3. Types of material - All forms.

K. Assembling

1. Process - The assembly of the required number of plates to form a fuel assembly.
2. Equipment - Work bench, jigs and assembly fixtures.
3. Types of material - Plates and other shapes.

L. Brazing

1. Process - Brazing of previous assembly to form a semi-finished fuel assembly.

- IV.L. 2. Equipment - Brazing furnaces or hand-brazing equipment.
3. Types of material - Assemblies of plates and other shapes.

M. Mechanical Fastening

1. Process - Cold working of finished fuel sub-assemblies into larger units.
2. Equipment - Special tools and fixtures.
3. Types of material - Finished fuel sub-assemblies.

N. Machining

1. Process - Typical machine tool operations, required to meet close tolerance dimensions.
2. Equipment - Lathes, milling machines, drill presses, hand tools and centerless, cylindrical and surface grinders, etc.
3. Types of material - Special contoured nuclear fuel components such as fuel plates, assemblies and/or semi-finished fuel elements.

O. Inspection

1. Process - Inspection of uranium or uranium-containing material in various stages for dimensional and metallurgical tolerances.
2. Equipment - Work benches, gauging tools, surface plates and ultrasonic, dye penetrants and eddy-current equipment.
3. Types of material - Plates, slabs and assemblies.

P. Powder Weighing*

1. Process - Weighing of uranium ceramic powders and combining them with component powders (stainless steel, boron carbide, or other additives) prior to compacting or subsequent processing.

- IV.P. 2. Equipment - Scales or balances and ventilated drybox.
 3. Types of material - Uranium ceramic powders.
- Q. Powder Blending*
1. Process - Blending of weighed powder and additives; binding agents may be added at this step. All blending is done in sealed containers.
2. Equipment - Blender and spaced cannister and ventilated drybox.
3. Types of material - Uranium ceramic powders.
- R. Powder Pressing*
1. Process - Pressing of uranium ceramic powders in a die to form a compact or to coin sintered compacts.
2. Equipment - Die and ventilated press.
3. Types of material - Blended uranium powders and compacts.
- S. Sintering or Heat Treating*
1. Process - Sintering, annealing and other heat treating of uranium and uranium-containing materials.
2. Equipment - Furnaces.
3. Types of material - Ingots, plates and pressed powder compacts.
- T. Isostatic Pressing
1. Pressing of cladding material onto fueled cores or compacting uranium forms using gas pressure.
2. Equipment - Pressure vessel and associated gas compressing facilities and instrumentation.
3. Types of material - Uranium ceramics, uranium and uranium alloy cores and plates.

IV. U. Chemical Cleaning

1. Process - Chemical cleaning of components or elements in caustic, acid or water baths.
2. Equipment - Stainless steel and/or plastic tanks.
3. Types of material - Clad plates and assemblies.

V. Chemical Milling*

1. Process - The stripping of cladding material from uranium containing alloy by means of chemical etching of the material by caustic and/or acid solutions.
2. Equipment - Stainless steel tanks.
3. Types of material - Reject fuel plates and other types of material.

W. Typical Fabrication Procedures

The steps listed above may be performed in any order, subject only to the rules contained in Section VI, Nuclear Safety. The following fabrication sequences are listed as typical of the fuel production schedules which are used. They should not be considered a binding part of this license and are subject to modification at the discretion of Sylcor's technical personnel. (See Flow Charts of Typical Fuel Fabrication Processes, Figures 5 and 6, Pages 27 and 28.)

1. Alloy Plate Elements

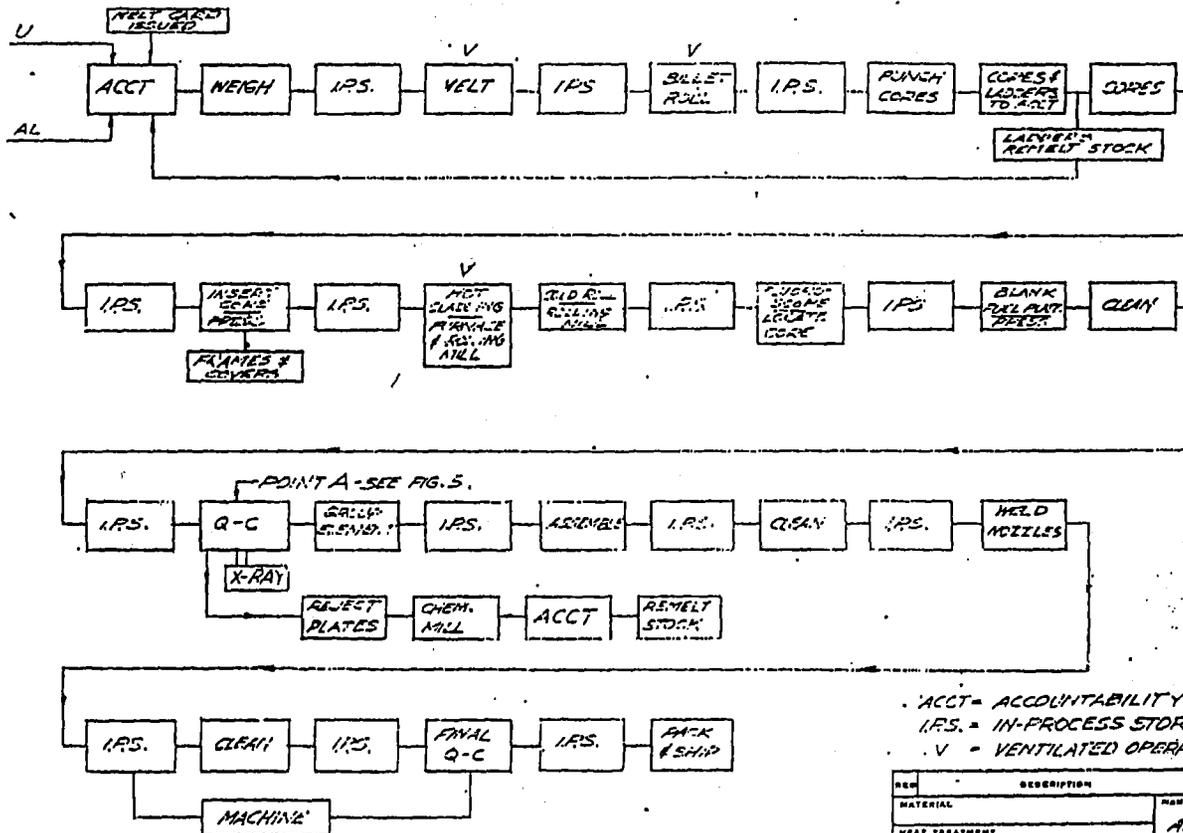
- | | |
|------------------------|------------------|
| a. Melting and casting | e. Radiography |
| b. Heating | f. Sampling |
| c. Rolling | g. Rolling |
| d. Shearing | h. Core Punching |

SEE FIG. 5
TOLERANCES UNLESS OTHERWISE SPECIFIED
SEE DIM. 5 PAIR. DIM. 6 ANGULAR DIM. 8

SIZE AND MANUFACTURER'S
TOLERANCES ARE NOT INCLUDED.

SHARP AND
SHARP EDGES

B 33541



ACCT = ACCOUNTABILITY
I.P.S. = IN-PROCESS STORAGE
V = VENTILATED OPERATION

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FIG. 6
ALLOY FUEL ELEMENT
FLOW CHART

REV.	DESCRIPTION	REV.	DWG NUMBER	REV.	NEXT ASSEMBLY
MATERIAL		NAME FLOW CHART			
HEAT TREATMENT		ALLOY FUEL ELEMENT			
FINISH		SYLVANIA ELECTRIC PRODUCTS INC.		FIG. 6	
AEC APPR.		SYLOR DIVISION		Micksville, N.Y.	
DATE	DRAWN BY	CHECK BY	SCALE	NUMBER	
				B 33541	

SYL00083421

IV.W.1.

- i. Pressing core into picture frames.
- j. Rolling
- k. Welding
- l. Rolling
- m. Radiography
- n. Shearing
- o. Assembly of Elements
- p. Brazing
- q. Welding of end boxes
- r. Radiography

2. Ceramic Plate Elements

- a. Weighing of powder
- b. Blending
- c. Pressing
- d. Sintering
- e. Coining (pressing)
- f. Pressing into picture frame and subsequent steps "g" through "r" are the same as above for alloy plate elements.

SECTION V
HEALTH & SAFETY

SYL00083423

V. HEALTH AND SAFETY

A. General

All operations in the plant will be controlled and monitored to insure that the radiation limits and exposures will be maintained below those specified in Part 20 to Chapter 1 of Title 10 of the Code of Federal Regulations. The plant emergency procedures are attached (see Appendix C).

B. Personnel Safety

1. Safety Training

Each new employee attends a training session exclusively on general safety and nuclear safety. This is given by the Safety Department. Periodic nuclear safety training sessions are conducted by the Safety Department.

2. Protective Clothing

Personnel handling radioactive material will wear protective clothing (gloves, aprons, laboratory coats, work uniforms, safety glasses, chemical goggles, shoe covers, etc.) as required, depending on the operation performed and the degree of the hazard as determined by the Health and Safety Department. Respiratory masks, face shields and asbestos gloves are available for emergency use. All protective clothing is processed by a laundry facility having an AEC special nuclear material license.

3. Monitoring

Film badges are supplied bi-weekly to all personnel exposed to radioactive materials where the external exposure is, or is

V.B.3. likely to be, greater than 25% of the maximum permissible level for a week, and to any personnel who operate radiation producing equipment (x-ray or fluoroscope units), or who work for the accountability or melting sections. Every employee receives a complete physical examination every eighteen months.

4. Eating Prohibited

Eating any type of food is prohibited in work areas. Smoking is prohibited while handling or processing unclad, unclad radioactive materials.

C. Surveys

Detailed records of all the surveys indicated below are permanently maintained by the Safety Department.

1. Contamination

Wipe samples are taken on a weekly basis in the production area. They consist of a one (1) inch diameter piece of Whatman #41 filter paper. This paper is wiped over an area of 100 square centimeters. It is counted on a Baird Atomic alpha gas proportional counting system which consists of:

- One (1) Ratemeter Model #432
- One (1) Non-overloading Amplifier Model #215
- One (1) Glow Tube Scaler Unit and Timer
- One (1) Preamplifier Model #231
- One (1) Gas Proportional Alpha Head and Sample Holder

Areas in which unclad material is processed has an alpha limit of 25 counts per minute, all other areas have a limit of 5 counts

V.C.L.

per minute. Any readings above these limits requires decontamination. Decontamination is accomplished by washing and scrubbing with a water solution of West Disinfectant Company's Wedac. These solutions are filtered and the filters are stored in drums for burial. In addition to the above, surveys are made using an Eberline PAC3-G alpha gas proportional counter. Any detectable reading on a wipe of approximately 100 cm² requires decontamination. This is followed up by a wipe with the Whatman #41 paper and Baird instrument counting. Any direct reading of fixed alpha contamination over 2000 counts per minute requires decontamination. The surveys with the Eberline instrument are conducted twice each year.

2. Air Sampling

Each operation where airborne contamination may be generated is air sampled a minimum of four (4) times each year. The air samples are taken with a vacuum pump drawing 30 liters of air per minute through a 1-1/8 inch diameter Whatman #41 filter paper. The paper is inserted into the Baird Atomic system and counted for alpha. The operation involved is melting. Twice each year air samples are taken in all areas of the plant. Four (4) times each year air samples are taken at the outlet side of the melting ventilation systems.

3. Liquid Waste Into Drains

There are no sinks in the production area and there is no possibility of U-235 accumulating in any drain. All liquid drain lines are fed into a sump. The Safety Department samples the sump

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R-1

Page 32

SYL00083426

V.C.3.

water once each month. This sample is analyzed for uranium content. From 1960 through 1963 the concentration of uranium that has been found has ranged from 0 to 3×10^{-6} uc/ml.

4. Radiation

Those persons who are, or who are likely to be, exposed to levels of radiation in excess of 25% of the applicable values specified in 10 CFR Part 20 § (a) of 20.101, are issued film badges.

Beta-gamma surveys are conducted in all areas twice each year. The instrument used is model RMB, manufactured by Nucleonic Corporation of America.

D. Radiation Alarm

All areas in which enriched uranium is processed or stored are continuously monitored by gamma radiation detection equipment which will sound an alarm in the event of a criticality accident. This equipment is manufactured by the Victoreen Instrument Company and consists of:

One (1) Model 712 Basic Control Unit (power supply)

Two (2) Models 713 Auxiliary Chasis

Eleven (11) Model 715B Plug-in Stations

Eleven (11) Model 716A Sensing Elements

Twelve (12) Warning lights in blue colored globes

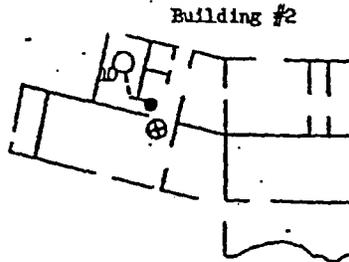
Five (5) Grouse Hinds #WEL303A Warning horns

The first three items above are installed in the main guardhouse. There is a man on duty in this guardhouse twenty-four hours a day,

V.D. seven days a week. One of his responsibilities is to keep the radiation alarm under constant surveillance. The sensing elements, warning lights and horns are distributed throughout the plant. When one of the sensing elements is exposed to a gamma field greater than 5 mrem/hr the warning lights and all of the horns in the manufacturing building and its vicinity are activated. In addition to the warning lights and horns located in the operating areas, there is a buzzer and light signal wired into the alarm circuits in the guardhouse. This is to insure that the guard on duty is instantly aware of the incident. Each sensing element is equipped with a solenoid and a strontium 90 source. Once a week the guard in the guardhouse pushes a button on each of the plug-in stations and recalibrates each unit. A written log is maintained of these tests. The alarms and warning lights are also checked out at this time. The locations of the sensing elements, warning lights and horns are indicated on Figure 7, page 35. The response time for this instrument at an alarm setting of 5 mr/hr is three (3) seconds in a radiation level of 20 mr/hr. Model 716A sensing elements are ionization chambers, and will not saturate at a radiation level to be anticipated from an incident causing 10^{18} fissions during a period of 0.1 second at a point where special nuclear material will be located nearest to any sensing device. There is a sensing element within 120 feet of every location where special nuclear material is handled or stored. In the event of a power failure, an auxiliary power generator automatically supplies

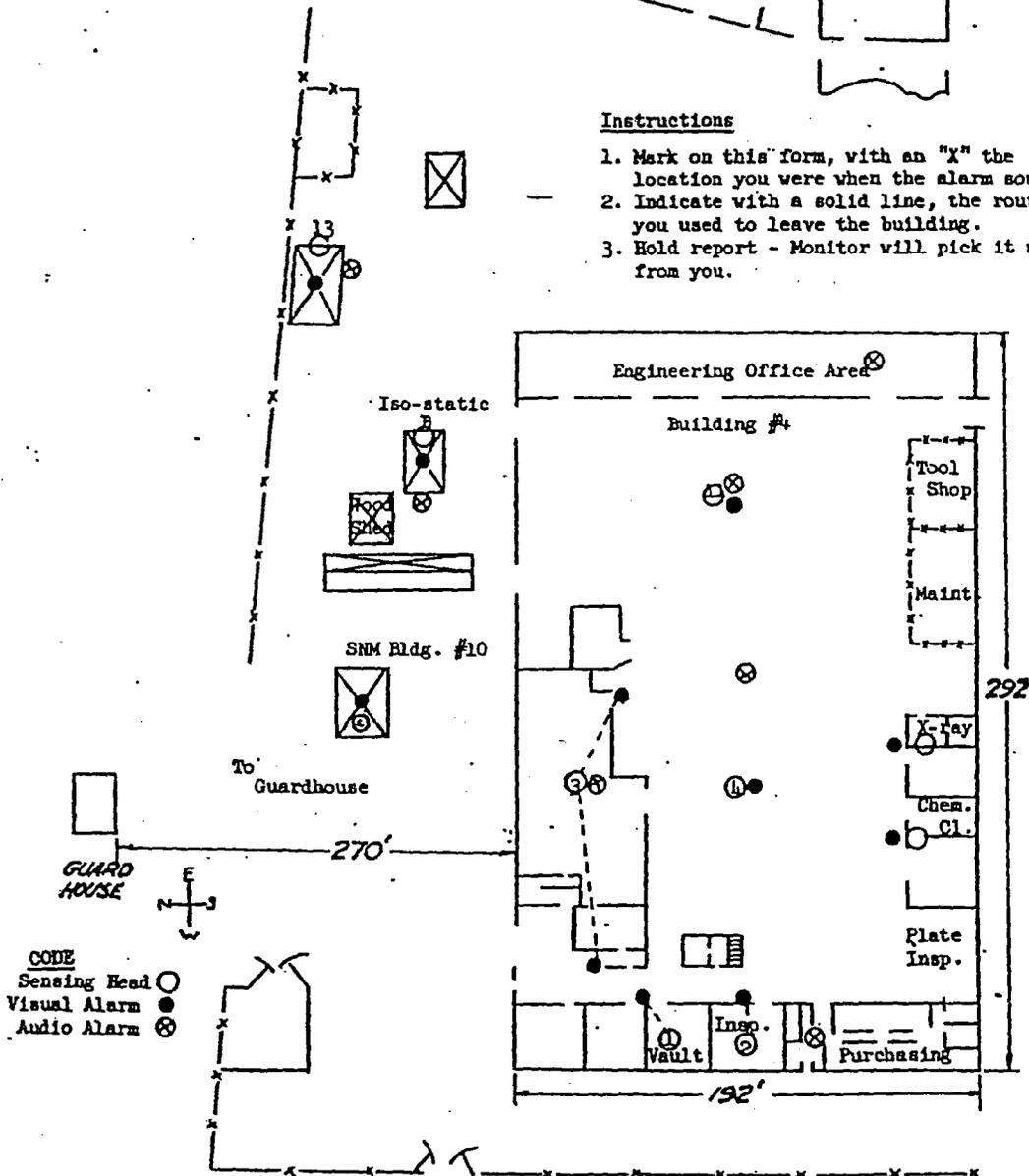
Personnel Criticality Report

Name (Print)		ID #	Date
Read	Time	Monitored By	



Instructions

1. Mark on this form, with an "X" the location you were when the alarm sounded.
2. Indicate with a solid line, the route you used to leave the building.
3. Hold report - Monitor will pick it up from you.



00337-R2

FIGURE 7 SCALE APPROX 1/8" = 27 FEET

V.S. connections in the building.

1. Flammable Liquids

All flammable liquids will be stored in a remote building or in approved non-flammable metal cabinets. In processing operations, all flammable liquids will be contained and handled in approved safety cans.

2. Flammable Gas

Areas where hydrogen gas is used are monitored by a continuously operating Mine Safety Appliances combustible gas alarm system model EX-S. It is an eight (8) station panel, and the alarm circuit is set for 40% of the lower explosive limit. This unit is tested monthly when hydrogen is used.

3. Equipment

There is one (1) Scott Air-pak self-contained emergency gas mask in building #4, and four (4) other units available in nearby buildings. A manifold system for recharging the compressed air cylinders for this equipment and spare air cylinders are on the site.

Throughout the Commercial building are six (6) CO₂, two (2) regular dry powder, and three (3) all-purpose dry powder fire extinguishers.

The ventilation systems for the hot rolling mills are equipped with Ansul P-6 automatic dry powder fire extinguishing systems. This is to control oil fires in the ducts.

There is a hose shed and a yard hydrant at the northeast side

V.F.3.

of building #4. It is equipped with four (4) fifty (50) foot lengths of $2\frac{1}{2}$ inch hose, all-purpose nozzles and spanner wrenches. All equipment is visually inspected monthly, CO₂ extinguishers are weighed semi-annually, fire hoses are tested annually, and the sprinkler system is flow tested weekly. Hose lines cannot be brought into either building 4 or 10, unless specific approval is obtained from the Safety Engineer or in his absence the Plant Manager.

G. Powder Operations

The following additional procedures will be utilized on processes involving uranium powders or unsintered compacts.

1. Such operations will be performed in either gloveboxes, hoods, furnaces, or sealed cannisters. Airflow through the openings of gloveboxes and at hood openings ranges from 50 to 75 linear feet per minute.
2. All gloveboxes and furnaces used for such work will be ventilated and the air passed through a Trion electrostatic precipitron or through American Air Filter 50FG medium.
3. Neither powder nor unsintered compacts will be handled with bare hands. During most operations these will be handled with forceps or through the rubber gloves of the dryboxes.
4. At the end of each job, all gloveboxes and furnaces will be thoroughly cleaned to remove any powder. The uranium oxide process leaves so little powder in dies, gloveboxes, etc., that cleaning is not necessary during a job. The process however,

V.G.4. will be surveyed periodically by the Health and Safety Department to check that point. Air sampling and portable alpha monitoring instruments will be used for that purpose.

H. Affects of Fire, Explosion or Power Failure

1. Power Failure

Sylcor's operation requires manual transportation of fissionable material from one operation to another. In case of power failure, there would be no movement of this material, however, a power generator supplies current for the operation of the criticality alarm. Battery powered emergency lights are automatically switched on when the line power fails.

2. The possibility of a fire or explosion of major proportions, or one involving a release of contamination outside of the building, is quite remote due to the emergency equipment available and the safety precautions used.

I. Nuclear Safety Inspections

The Safety Engineer and/or his staff make plant wide inspections for violations of criticality rules on a daily basis.

1. Any violation is immediately corrected by the responsible area supervisor.
2. A report, written by the Health and Safety Department, is submitted to the Site Manager, Plant Manager and the Superintendent of Plant Operations.
3. A written report of action taken is filed by the Health and Safety Department.

V.I. 4. A chronic violator of criticality rules is subject to disciplinary action.

J. New or Revised Operations

The Safety Department reviews all new or revised operations and equipment for health and safety problems, and for compliance with the SRM license application rules. Production and engineering cannot proceed to institute changes until they have a Safety Department approval.

SECTION VI
NUCLEAR SAFETY

SYL00083437

SECTION VI
NUCLEAR SAFETY

GTE 0000322

VI. NUCLEAR SAFETY

A. General Nuclear Safety Considerations

The nuclear safety of all operations is based upon limits of mass, volume, slab thickness, cylinder diameter, moderation control, or combinations of these as per TID-7016, Revision 1, and "Application Guide for Special Nuclear Material License" dated February 1964. (Herein after referred to as AG 2-64). All handling of enriched uranium may be categorized as manufacturing operations, transfer of material, storage or shipping. Different enrichments are not mixed in storage units or at any time during processing. Segregation is maintained through project and batch numbers assigned by accountability.

1. Manufacturing Operations

Each piece of equipment (furnace, punch press, rolling mill, shear, work bench etc.) is defined as a criticality station. Only one control batch in approved containers (see Appendix B) is permitted at a criticality station at one time. The initial loading of uranium within an approved container is done only by an accountability representative. No one but an accountability representative can add to or take away from the material in a control batch.

The general rules for manufacturing operations are:

- a. The maximum U-235 mass limits are detailed in

Appendix B for each form of material that is handled.

- b. A control batch is based on the physical form of the material as per Appendix B.
- c. Three types of control batches are used in Appendix B.

VI.A.1.c.

(i) Normal Limit

Quantities of U-235 for the forms listed in Appendix

B that can be --

processed at any operating station excepting
a soluble limit station

or

stored at any in-process or accountability
station.

(ii) Soluble Limit (Ref. Section VI.E.)

The quantity of U-235 for any form that can be --

processed at any operating station

or

stored at any in-process or accountability
station.

(iii) High Limit (Ref. Section VI.E.)

Quantities of U-235 for the forms listed in Appendix

B that can be --

processed only in certain operating stations as
specifically detailed in Appendix B and other
sections of this license application

or

stored only at accountability stations as
specifically detailed in Appendix B and other
sections of this license application.

VI.A. 2. Transfer of Material

AEC PUBLIC DOCUMENT ROOM

All special nuclear material is transported in approved containers (Ref. Section VI.D.4. pg.64) as applicable to the form. (See Appendix B)

3. Storage

The type, arrangements and number of units in all of the storage areas is based upon appropriate mass limits in Appendix B and TID-7016, Revision 1, Table V.

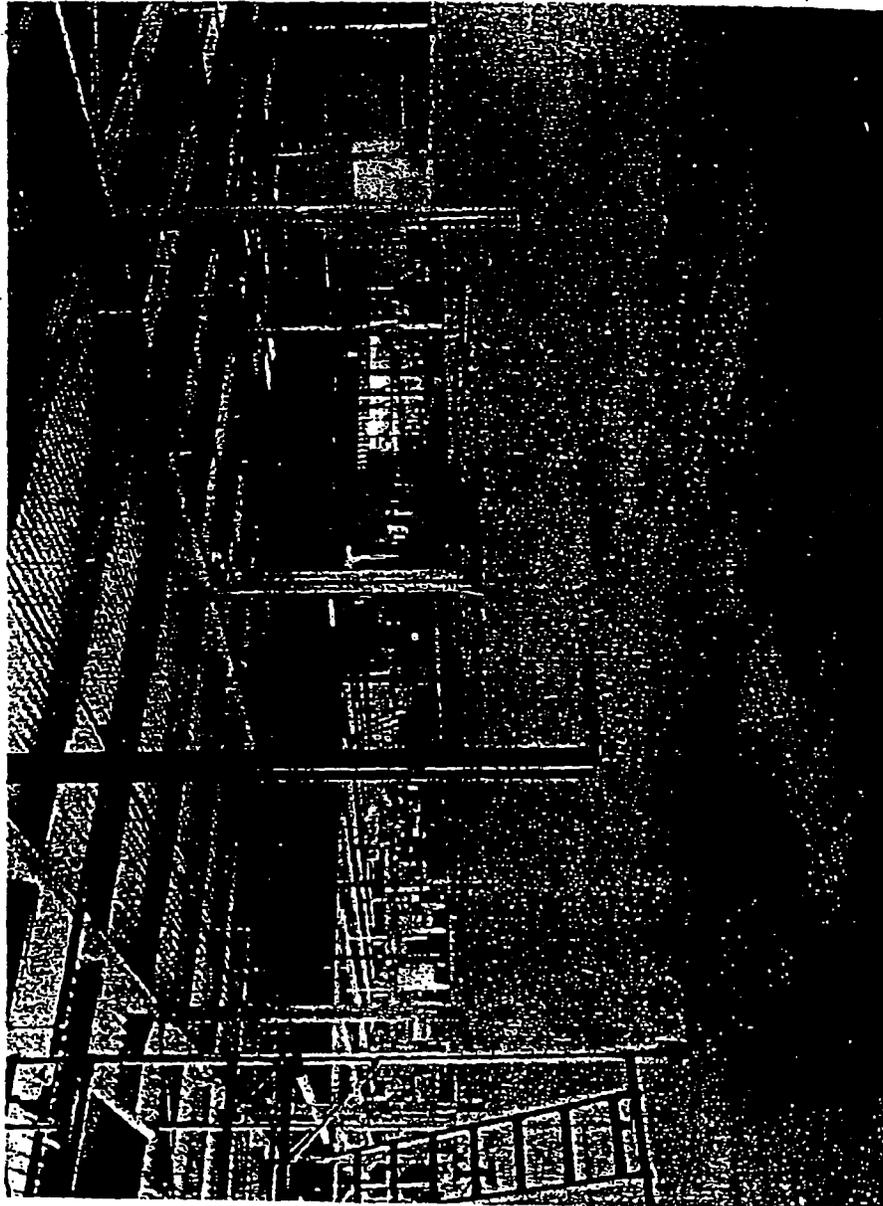
4. Building Construction (Figure 7A, Page 46)

The outer walls of building 4 are constructed of concrete block, extending 10 feet from floor level. Surmounting this lower wall section, are sheet metal walls extending 10 feet to the plant roof. As shown in Figure 3, page 16, there are inner walls on the east and west sides which separate the non-fabricating functions of the operation. An inside concrete block wall, 24 feet north from the outside wall, separates the x-ray, fluoroscope and cleaning operations from the fabrication floor area. All other partitions are either made of construction board or sheet metal.

Therefore, the majority of the operational area of building 4 exhibits a minimal reflective condition. Regardless of this fact (unless otherwise stated) full reflective criteria has been used to establish the number of units per storage area.

5. Water Entry and Flooding Potential

The topography of the Hicksville, L.I. area makes it



25,000 SQ. FT. EXPANSION AT SYLOR'S HICKSVILLE COMMERCIAL FUEL PRODUCTION FACILITY
NEARING COMPLETION.

FIGURE 7A

VI.A.5. virtually impossible to have flooding by rainfall or other sources. It is inconceivable that flooding from sprinkler water could rise to a depth greater than 2 inches above floor level. The plant floor is approximately 2 inches above the ground level, and there are many floor level openings through which the water would flow out to the ground level. All storage is 3 inches or more above floor level.

B. Receiving of Special Nuclear Materials

1. Enriched uranium will be received in the form of metal, alloy or ceramic powders.
 - a. In all cases, these materials will be received in birdcages from either licensed vendors or directly from a U.S. AEC facility.
 - b. In all cases, the material will be received at the Shipping/Receiving area (See Figure 3, page 16).
 - c. The single shipment of incoming material will be stored in a linear array. Any other special nuclear material to be placed in this area will be 12 feet away, and placed in a linear array. (Ref. TID-7016, Revision 1, page 27)
2. The receiving clerk will ascertain the contents of the incoming lot from the shipper's papers, and inspect the container for visible damage. If the containers are physically damaged, the procedures in Section VI.B.5-PG.49, will be followed. If the containers are undamaged, the following procedure will be followed:
 - a. Health-Safety representatives will check the outside of the

VI.B.2.b. containers for radiation.

- b. The unopened containers will be delivered to an accountability representative.
3. The accountability representative will have open only one birdcage at a time.
 - a. If moisture is present the procedures in Section VI.B.4. below, will be followed.
 - b. He will weigh the individual units or pieces in that container to 1/100 gram. The total U weight will be checked against the shipper's papers.
 - c. This material will be identified and stored in accordance with procedure given in Section VI.C.1., page 50.
4. Should a lot of fissile material be received in a wet condition, the following steps will be promptly taken by the accountability representative.
 - a. The complete shipment, in the received containers, will be moved to a separate area in building 4.
 - b. The received lot of fissile material will be separated into 350 gram units.
 - c. Each 350 gram unit, in a separate, open container, will be stored on separate shelves in the mezzanine, building 4.
(Ref. Section VI.C.3. page 54)
 - d. The material will be allowed to dry.
 - e. The empty container will be dried separately.
 - f. After the fissile material has been dried, it will be returned

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R-2

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GTE 0000329

VI.B.4.f.

to the dried container (if undamaged) in 350 gram units. If the container is damaged, the material will be placed in an undamaged container of identical construction owned by the supplier. The special nuclear material will be returned to the shipper in the same amounts, in the same containers as received.

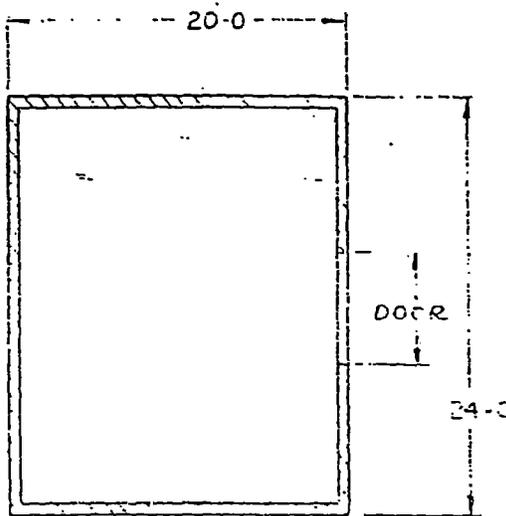
5. Should special nuclear material be received in physically damaged containers, the following steps will be taken by the accountability representative.

- a. Containers will be placed in a linear array in an open area in building 4 on at least 5 foot centers.
- b. One container at a time will be moved into a 10 foot square area.
- c. The fissile contents will be removed from the physically damaged container in units as given in Appendix B, as appropriate for the form of the material.
- d. One unit at a time will then be stored as a normal lot in accountability storage area.
- e. The physically damaged condition will be reported to the vendor.

C. Storage of Special Nuclear Material

There are two main groupings of storage and they are Accountability and In-Process. All storage is in planar arrays unless otherwise stated. The mass limits for each unit is indicated in Appendix B, as appropriate for the form. The unit limits are within those indicated in

VI.C. b. Storage is in a planar array. All units are separated by a minimum center to center space of 18 inches. The limit for this building is fifteen (15) birdcages. As per TID-7016, Rev. 1, Table V, this is within safe limits.



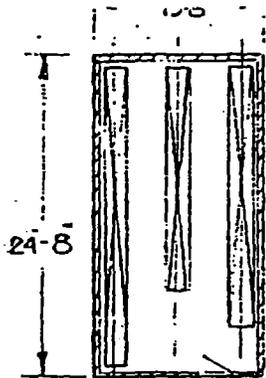
FLOOR PLAN OF BUILDING 10
EYE CASE STORAGE

FIG. 5ASTORA-E BUILDING #10

GTE 0000332

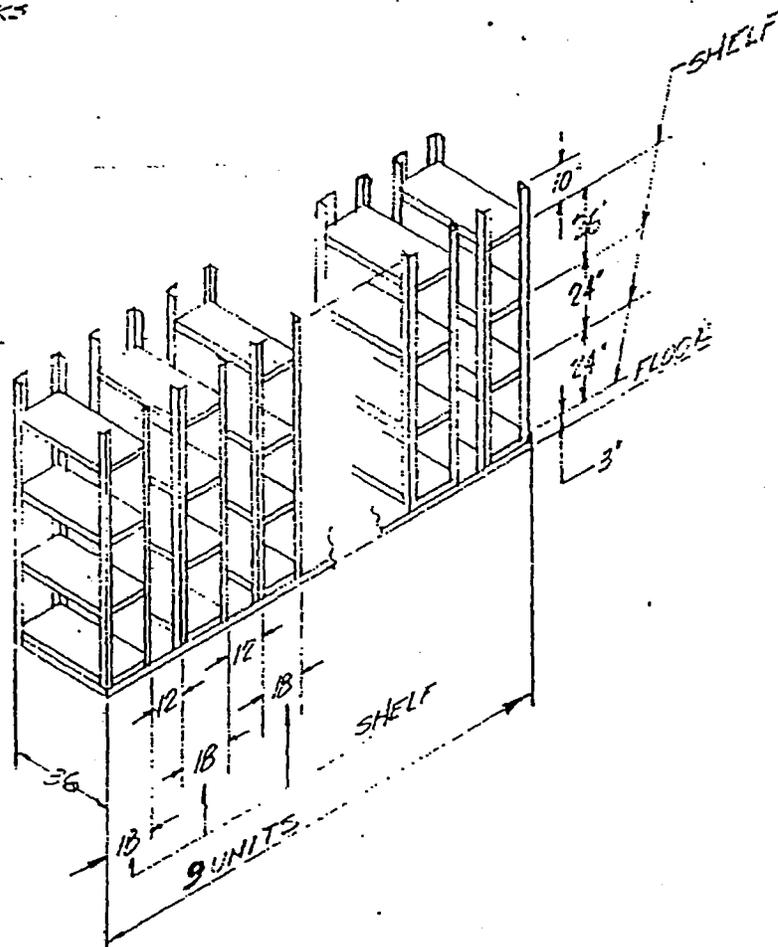
a. All raw material (metal or ceramic powders) is stored in closed containers. High enrichment materials have a container capacity of 3.6 liters. This is within the limits of AG 2-64, Table IV. Low enrichment materials (less than 5% enriched) have a maximum container capacity of 27 liters. This is within the limits of KI019 part 3, Table XVI Page 17.

b. In addition to the 3.6 liters limit, we have established a mass limit of 10 kg. U-235 for high enrichment containers.



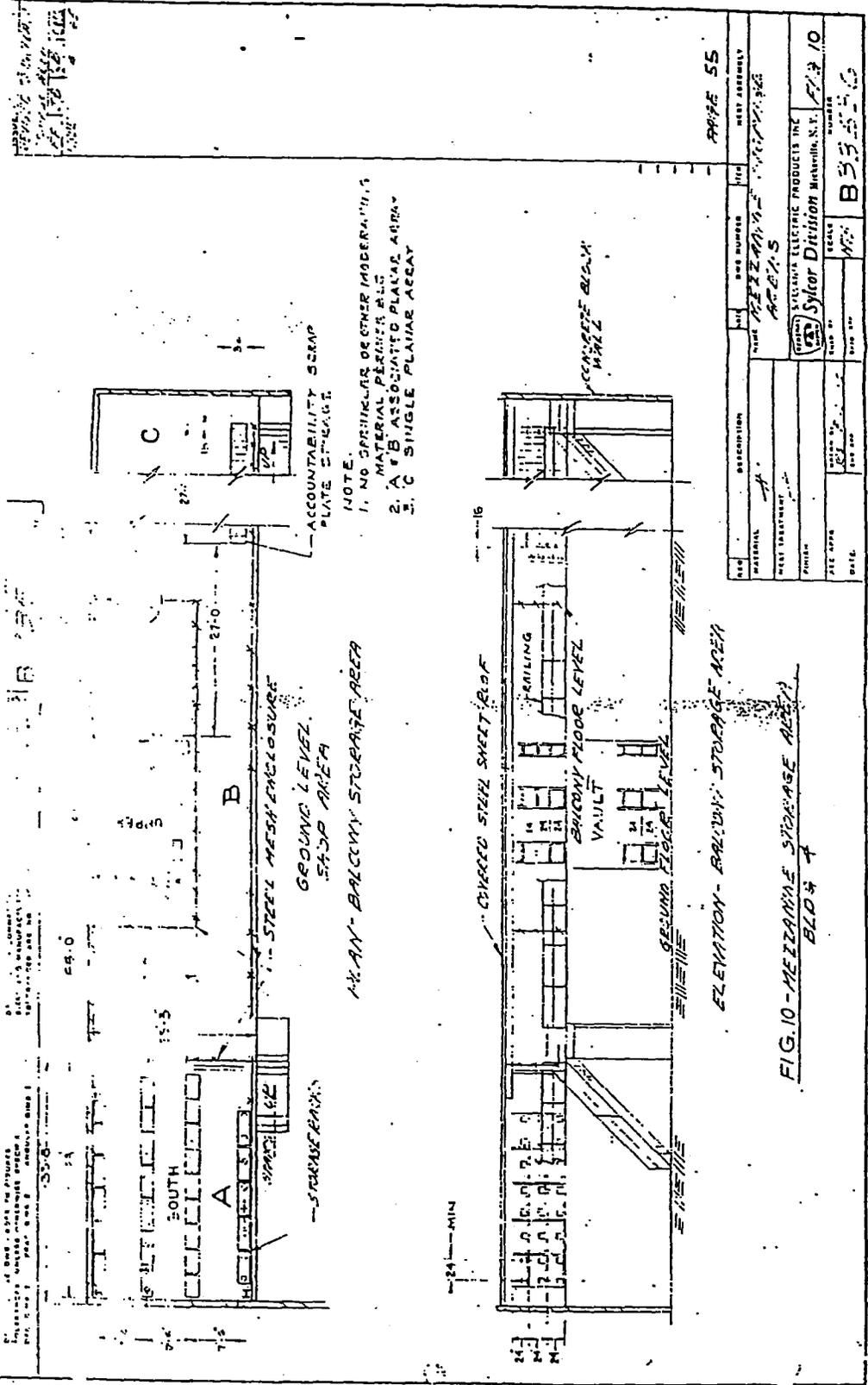
FLOOR PLAN OF VAULT
SHOWING ARRANGEMENT
OF RACKS

MINIMUM DISTANCE BETWEEN
CONTAINERS IN EACH ROW TO BE 7.5 FT.



A 3-5-3

FIG. 9 STORAGE RACKS IN VAULT
DASHED BOARDING OMITTED FOR CLARITY
180 STORAGE UNITS IN VAULT PERMISSIBLE



NOTE:
 1. NO SPRINKLER OR OTHER MODERATION MATERIAL PERMITTED
 2. A & B ASSOCIATED PLAIN AREA
 3. C SINGLE PLAIN AREA

NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	STEEL SHEET	100	SQ. FT.	1.50	150.00
2	RAILING	100	LINEAL FT.	1.00	100.00
3	CONCRETE BUSH WALL	10	SQ. FT.	10.00	100.00
TOTAL					
\$350.00					

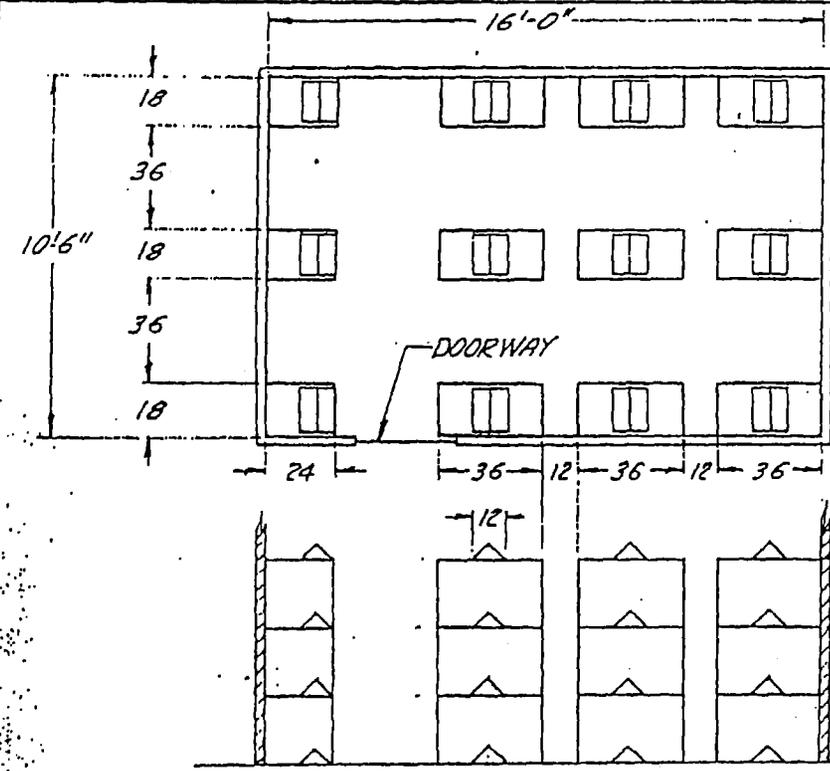
FIG. 10 - MEZZANINE STORAGE AREA
 BLDG. A

DO NOT TOLERANCE UNLESS OTHERWISE SPECIFIED
 DEC. DIMS. TRAC. DIMS. ANGULAR DIMS.

DRILL HOLE COMMERCIAL STOCK
 SIZES AND MANUFACTURERS' TOLERANCES ARE NOT INCLUDED.

REMOVE ALL BURRS AND SHARP EDGES

NUM. **A34474**



ISSUE:

PAGE 53A

REQ.	DESCRIPTION	NOTE	QTY NUMBER	ITEM	NEXT ASSEMBLY
MATERIAL	#	MAKE ACCOUNTABILITY SCRAP & WASTE STORAGE			
HEAT TREATMENT	#				
FINISH	#	 SYLVANIA ELECTRIC PRODUCTS INC. Bickerville, N. Y. FIG. 10A			
ACC. APPR.		DRW. BY	CHKD. BY	SCALE	NUMBER

GTE 00000336

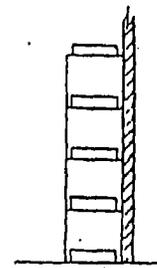
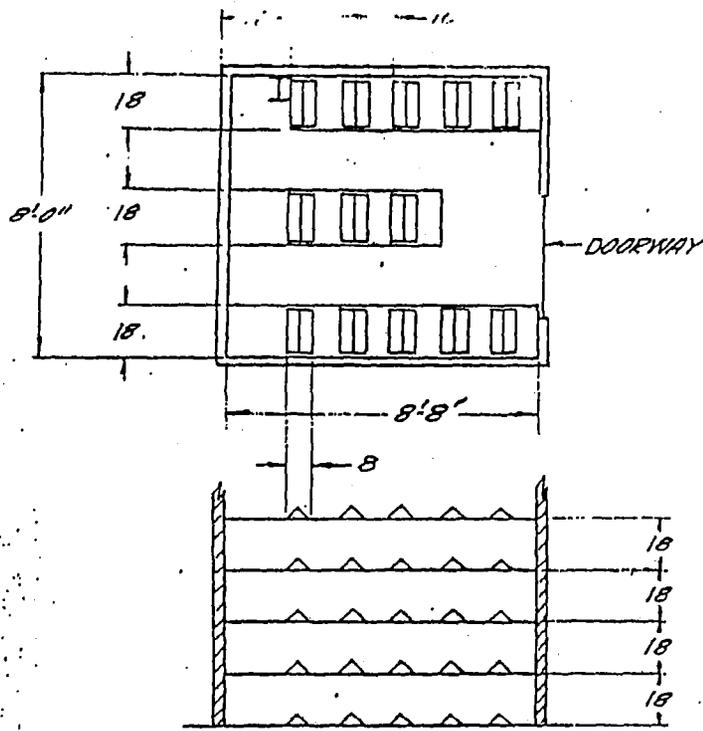
DO NOT SCALE

REVISE ALL

NUMB

A 34473

A 34473



PAGE 55B

REQ	DESCRIPTION	NOTE	DWG NUMBER	ITEM	NEXT ASSEMBLY
	MATERIAL #	NAME DRY-IN-PROCESS STORAGE			
	HEAT TREATMENT #	SYLVANIA ELECTRIC PRODUCTS, INC. Sylcor Division, Elektorville, N. Y.			
	FINISH #	FIG. 105			
SEC. APPR.	DATE	SCALE	DRAWING NUMBER		
			A 34473		

GTE 00000337

VI.C.3.

As indicated above, the minimum spacing between shelves and rows and the maximum limits as indicated for the vault apply here.

The one and only exception is that the row of shelves nearest the stairs (see Figure 10, page 55) will be used for fuel plates with a maximum of 2 kg. U-235 per shelf. The distance between this row of shelves and the center row, permit this storage, and the maintenance of the minimum container surface to surface separation between rows of 7.5 feet.

4. In-Process Storage in the Production Areas

In-process storage is located throughout the production areas.

The racks are constructed of angle iron. (See Figures 11, 12 and 13, pgs. 57, 58, 59) The minimum center to center spacing of units in a rack or planar array is 16 inches. The nuclear safety evaluation of this storage gave consideration to the following:

- a. The mass limits for the types of material to be located in this storage are found in Appendix B, under normal and soluble limit stations. The maximum U-235 in any storage unit is 2 kg.
- b. The storage of all forms, excepting fuel elements, is in approved containers. (Ref. Section VI.D.4.) These containers offer moderation control. The moderation control permits the safe storage of U-235 in maximum quantities of 2 kg. per unit as per AG 2-64, Table IV.
- c. The minimum horizontal and vertical container center to center spacing of units is 16 inches. All storage is in a

VI.C.3.

at the west end of building 4. Its dimensions are 25 feet x 28 feet x 7 feet. The west and south walls are aluminum sheet, and the north and east walls are metal screening. The ceiling is the plant roof and is constructed of steel covered with fiberglass insulation. There is no sprinkler fire protection in this area. The use of combustibles is strictly restricted. As indicated above, the minimum spacing between shelves and rows and the maximum limits as indicated for the vault apply here. The one and only exception is that the row of shelves nearest the stairs (see Figure 10, page 55) will be used for fuel plates with a maximum of 2 kg. U-235 per shelf or for skull and dross with a maximum of 330 gr. U-235 per shelf. The distance between this row of shelves and the center row, permit this storage and the maintenance of the minimum container surface to surface separation between rows of 7.5 feet. Storage in the north mezzanine is in accordance with the specifications detailed in Section VI.C.5. excepting the fuel plates may be stored directly on the shelves. The sprinklers in this area have been modified to prevent water from contacting the array.

4. Accountability Scrap and Waste Storage (See Fig. 10A, page 55A)

This room is located at the northwest side of the control area. It is isolated from other SNM storage by a minimum of 16 feet in any direction. The automatic sprinklers in the room have been removed and there are no other sources of moderating materials within it. The room is kept locked and access is restricted to accountability personnel. There will be two (2) types of storage in the area. One is the remelt scrap stored in melt trays

VI.C.4. (see page 58 Section VI.E.9.a.) and the other will be fines from crucible cleaning and some melt slag (see page Section VI.E.9.b.). The fines (with a maximum U-235 limit of 330 grams) will be stored in covered 5-gallon cans. This material is always dry and with covers the Π to X is always less than 20.

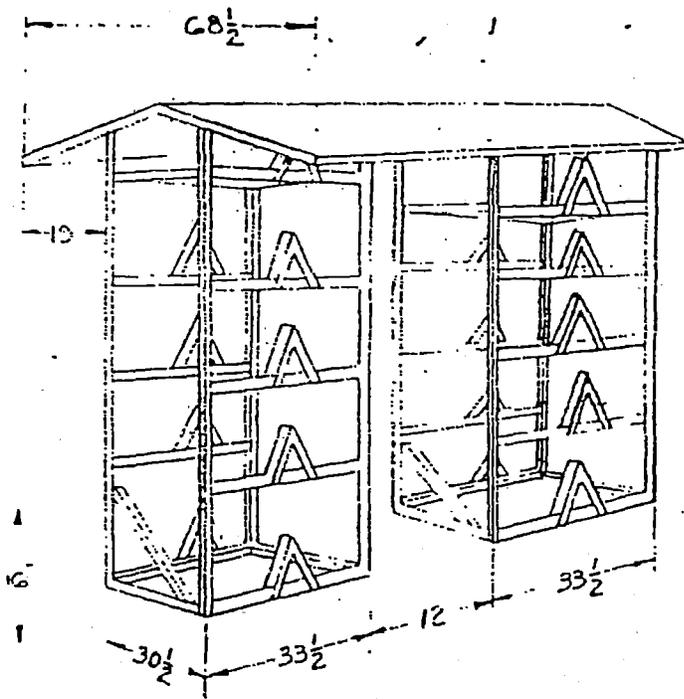
The storage array is cubic with a minimum vertical and horizontal separation center-to-center of 24 inches between units. One wall of the room is constructed of 8" hollow cement block and the other walls are light (20 gauge) sheet metal. As per TID 7016, Revision 1, Figure 22 for a nominal reflector about this array the maximum allowable number of units will be 170 on 24 inch centers.

5. In-Process Storage in the Production Areas

In-process storage is located throughout the production areas. The racks are constructed of angle iron. (See Figures 11, 12 and 13, pgs. 57, 58 and 59) The minimum center-to-center spacing of units in a high enrichment rack or planar array is 16 inches. Low enrichment (<5%) is not stored with any specific spacing between units in a rack when it is in an isolated array from other U-235. The nuclear safety evaluation of this storage gave consideration to the following:

- a. The mass limits for the types of material to be located in this storage are found in Appendix B, under normal and soluble limit stations. The maximum high enrichment U 235 in any storage unit is 2 kg. The maximum low enrichment U 235 in any storage unit is controlled by the capacity of the rack.
- b. The storage of all forms, excepting fuel elements, is in approved containers. (Ref. Section VI.D.4.) These containers offer moderation control. The moderation control permits the safe storage of high enrichment U-235 in maximum quantities of 2 kg. per unit as per AG 2-C, Table IV. Low enrichment materials are stored in containers or fixtures without specific mass limits.

- VI.C.5. c. The minimum horizontal and vertical container center-to-center spacing of units used for high enrichment alone or in combination with low enrichment is 16 inches. Low enrichment stored by itself has no specific spacing within a storage array. All storage is in a planar array. Each array is isolated from others by the larger of either 12 feet or the maximum dimension of either array. This is in accordance with TID 7016, Revision 1, Table V and page 27.
- d. Additional moderation control is given to these storage racks by having metal covers over them. The purpose of the covers is to prevent low density water moderation from sprinklers between the units in an array. The covers will have an overhang great enough to cover the longest container in the rack. According to data obtained from The Factory Mutual Engineering Division of the Associated Factory Mutual Fire Insurance Companies, there would be no horizontal movement of water at the height of the storage units (7 feet). The height of the sprinklers is 16 feet 3 inches.
- e. Dry In-Process Storage (See Figure 10B, page 55B)
- This room is located at the south central side of the control area. It is isolated from other SFS storage by a minimum of 12 feet in any direction. There are no sprinklers or other sources of moderating material within the room. Three of the walls of the room are constructed of light (20 gauge) sheet metal. One wall is constructed of 3/8 inch gypsum on both sides of 2 x 4 wood frame. This cubic array storage has a minimum of center to center spacing of 18 inches. The material to be stored within this room will be pressed



1340/4

FIG II IN-PROCESS STORAGE RACK

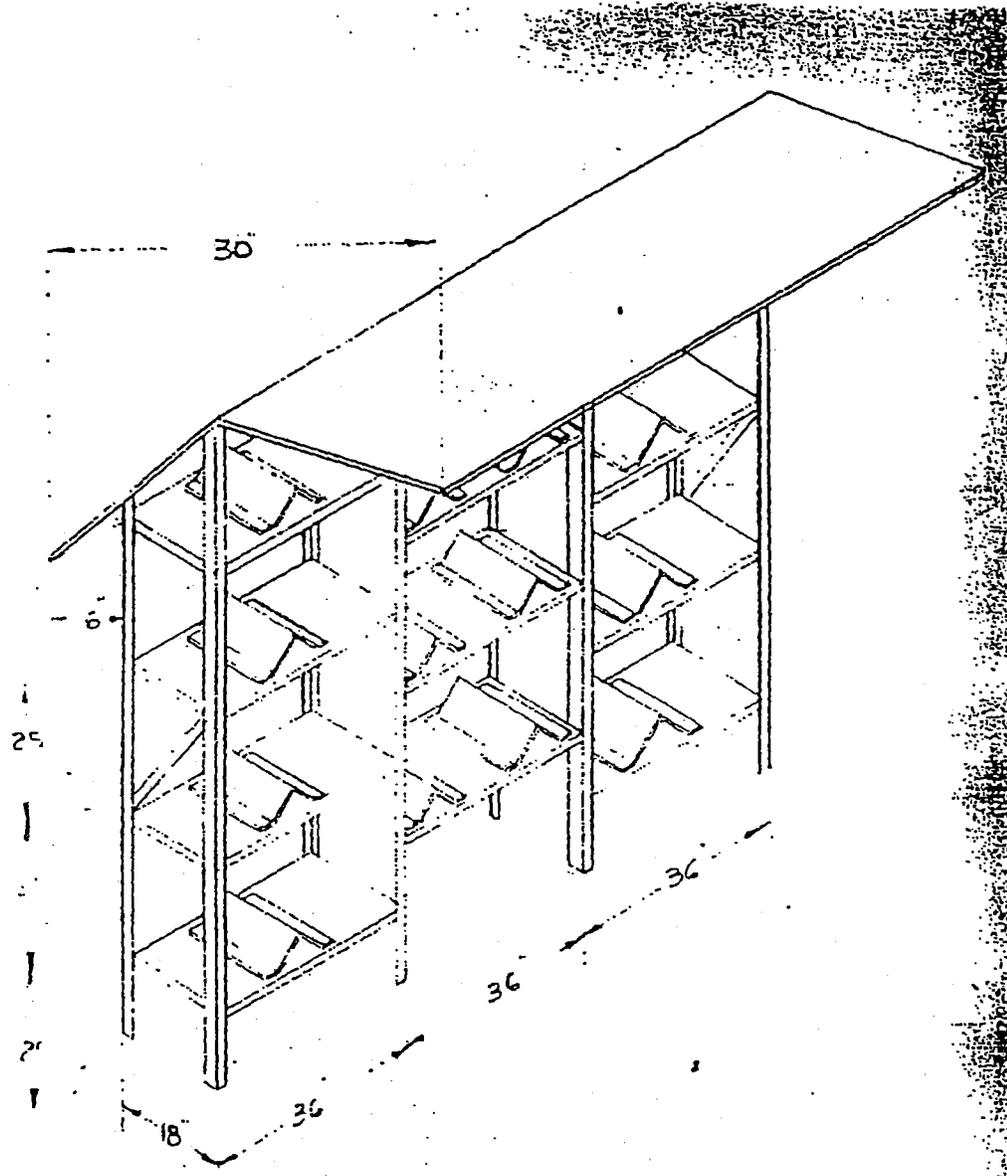


FIG. 12
SHELF STORAGE - INGOTS CORES & SCRAP
 CONTROL AREA

A 3407

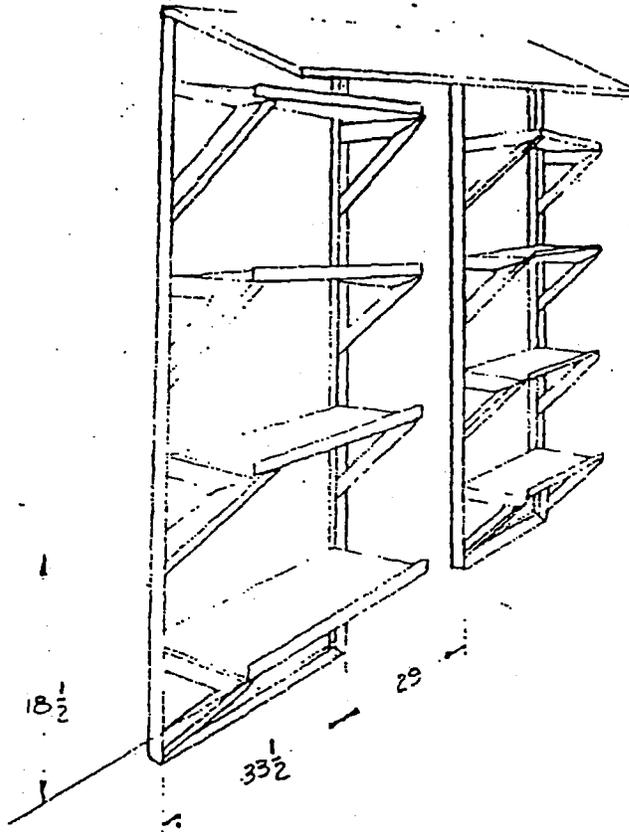


FIG. 13
WALL STORAGE RACK

A34072

VI.C.6.

compacts (330 grams maximum U-235, see page 76B VI.E.4.c.) and billets. Billets are sintered compacts placed in a picture frame and enclosed with a cover plate (see Appendix G). The billet limit is 2 kg. U-235. Billets and compacts are not mixed. Storage will either be directly on shelves or only in approved containers. (See Section VI.D.3.)

As per TID-7016, Revision 1, Figure 22 for a nominal reflector about this array, the maximum allowable number of units will be 75 or 18 inch centers.

D. Material Control

1. Identification

a. Route Cards

All approved containers with special nuclear material in any form, are accompanied by a route card. (See Appendix D) The route cards contain data such as project number, identification numbers of all pieces, and a list of operations in sequence to be performed on the material. Only an accountability representative may change or alter the number of pieces in the batch on the route card or its appendices. No container can be moved if these identification forms are

VI.C.5.a.

is separated from its nearest storage neighbor by the maximum dimension of either array or 12 feet which ever is greater.

- b. Remelt scrap such as plates, ingots, slabs and cores are stored in approved melt trays. (see Figure 17 Page 70) The U-235 limit per melt tray is 2 kilograms. There are no sprinklers in the scrap storage area. As can be seen in Figure 24 page 60-3 the scrap storage is located in three adjacent rooms separated only by light gauge sheet steel. The entire area is considered as one cubic array storage area. The maximum number of units in this cubic array will be 150. Each unit is separated from any other by a minimum of 24 inches center to center. As per TID-7016, Revision 1 Table IV and Figure 22, this quantity of U-235 with moderation control stored in a cubic array is safe. This storage area is separated from its nearest storage neighbor by the maximum dimension of either array or 12 feet, which ever is greater.

D. Material Control

1. Identification

a. Route Cards

All approved containers with special nuclear material in any form, are accompanied by a route card. (See Appendix D) The route cards contain data such as project number, identification numbers of all pieces, and a list of operations in sequence to be performed on the material. Only an accountability representative may change or alter the number of pieces in the batch on the route card or its appendices. No container can be moved if these identification forms are

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Page 60-1

GTE 00000346

VI.D.1.a.

not with the container. The one exception to this rule is that designated Quality Control personnel may extract plates from a container so that the proper number of plates for one fuel element assembly can be grouped. This element group becomes a control batch, and is handled at all subsequent times as a separate control batch with a new route card. If the route card is missing, only a supervisor can release the batch. This can be done only after the identity has been established by either finding the original route card or obtaining a duplicate route card approved by an accountability representative. The control batch technique, accountability procedures and the route cards maintain the integrity of each batch, and thereby prevent the mixing of license and accountability station material, and mixing of different weight percent alloys.

b. Individual Piece Identity

The identity of each piece of special nuclear material will be preserved as much as possible throughout the fabrication process. The accountability records will then correspond to particular identifiable pieces of material. When the piece is incorporated into a finished element, the accountability records will still indicate its U-235 content and the specific melt or powder batch from which it originated. Whenever practical, the identity will be maintained by marking the pieces. For example, ingots, rolled plates,

VI.D.1.b.

and punched cores may be numbered with a vibrating tool or a stamp. When the identity numbering will be obscured by subsequent operations (such as rolling), the identity will be maintained by the selective positioning of separate pieces in specific positions in the racks in which they are transported or held, as in the furnace operation. (Ref. Section VI.E.3. page 76) Racks may also bear labels identifying the material contained. The bottles in which uranium powders are transported will be labeled with the amount of material and the batch from which it is taken. The uranium oxide will be identified in a manner similar to alloy material after sintering.

2. Control Batch

Material in process is controlled by strict batch accountability with the control batch concept being maintained throughout the plant. Batches may be present in only three locations, criticality stations (manufacturing operations), in-process storage (between operations) and in transit. The maximum U-235 content of each batch as appropriate for the form, is as listed in Appendix B. The material will be initially weighed or counted into the control batches in accordance with the Criticality Limit Report (Ref. Section VI.D.3. pg63) by a designated accountability representative. The amount of material in a control batch will be changed (additions or deletions) only by a designated accountability representative.

VI.D. 3. Criticality Limit Report

In order to express the U-235 limits specified in Appendix B in terms of the number of pieces (ingots, cores, plates, etc.) that will be handled at each operating step, a Criticality Limit Report will be prepared prior to the start of each new job. A sample of such a report is included as Appendix E. It indicates the processing steps which will be performed on the material (Column 1), as well as the form of the material as it enters (Column 2), and leaves (Column 3) each operating step. The lower U-235 limit applicable to the form(s) of material utilized (see Appendix B) at each step, will also be shown (Column 4). This limit will be translated into the equivalent number of pieces that can be handled at that step (Column 5). The designation of the job, as well as its order number (which is used for all accounting, accountability and other references throughout the plant), will also be shown. The format of this report may be changed from that illustrated in Appendix E, provided that at least the same information will be included. The Criticality Limit Report will be prepared by the Production Engineering Group on the basis of the specifications in Appendix B. It will be approved by the Plant Manager and the Health and Safety Department. The report must then be accepted by the Accountability Department. No operations involving U-235 can begin until these steps have been completed. The Safety Department will post the criticality report limits in all areas where

VI.D.3. the special nuclear materials are handled (See Fig.14 pg.65)

4. Containers

A variety of containers is used because of the different physical shapes of the material as it progresses through the process. (See Figs. 15, 16, 17, 18, 19, and 19A, pgs. 68, 69, 70, 71, 72, and 72A) Transfer of fuel element components throughout the plant will be in tote trays, melt trays, core boxes, fiberboard sleeves, or rod trays, all referred to as containers. The U-235 limits for the appropriate forms for each container are as listed in Appendix B. Since flooding of the floor to a depth of 2 inches can be considered credible, no container will be placed directly on the floor. The sprinkler system discharges water at a rate of 44 gallons per minute per head, over an area of 120 sq. feet. This is equal to 0.36 gallons per minute per sq.foot. The largest container with a closed bottom has an open top area of 3.6 sq.feet. Therefore, the rate of water entry is 1.3 gallons per minute maximum. A test indicated that with a 1.3 gallon per minute inflow into the largest container, the outflow was 1.3 gallons per minute with two $\frac{1}{4}$ inch holes. All of the containers have drain holes in a position that precludes any water retention and with an area considerably greater than .39 sq. inches.

a. Carts - Figure 15, Page 68

There are only 7 of these carts. A sign on each cart requires that it be at least 5 feet away from any other yellow cart. Each cart is limited to one control batch on the top and one

CRITICALITY LIMIT IN-PLANT WALL CHART

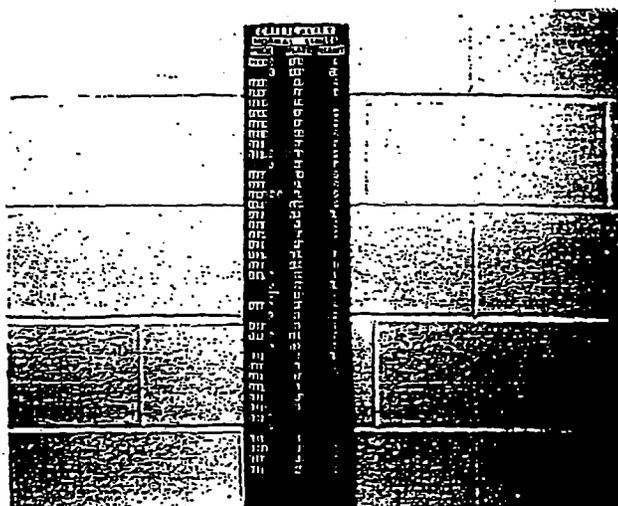


FIGURE 14

VI.D.4.a.

on the bottom shelf. They are bright yellow and are identified for special nuclear material only.

b. Tote Trays - Figure 16, Page 69

Tote trays are used for plates and are sized approximately 6 inches high x 8 inches wide x 48 inches long, or 4 inches high x 8 inches wide x 55 inches long. The plates lay flat on one another within the containers resulting in negligible void space between plates. All of the tote trays have two $3/4$ inch holes at both ends. This gives a total drain area of 1.77 square inches. These holes are at the extreme lower end and eliminate the possibility of any water retention. This moderation control permits the safe handling of 2 kg. U-235 per container, as fuel plates. (Ref. TID-7016, Revision 1, Figure 1)

c. Melt Trays - Figure 17, Page 70

A melt tray is used by accountability to issue virgin U-235, virgin aluminum and/or remelt stock for a specific melt. The melt trays are 2.25 inches high x 11.5 inches wide x 17.25 inches long. Each melt tray has a 7 inch x 1 inch hole at the end. The hole is covered with a piece of window screen to prevent pieces of material from falling out. The hole is at the extreme lower end and eliminates the possibility of any water retention. This moderation control permits the safe handling of 2 kg. U-235 per container for the forms as listed in Appendix E. (Ref. TID-7016, Revision 1, Figure 1)

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Page 65

GTE 00000352

VI.D.4. d. Core Box - Figure 18, Page 71

A fiber box is used to handle cores from the point of acceptance by accountability up to the hot rolling operation. The cores or sintered pellets are stacked in a polyethylene bag with a volume limit of less than 4.3 liters, and then placed in the core box. As per TID-7016, Revision 1, Figures 1 and 2, the combined volume and mass limits result in a safe unit. The picture frames and cover plates containing cores are placed directly in the core box with no additional containment which would affect the drainage from the holes in the sides. The box may be covered over the top to prevent dust from settling onto the material. As per TID-7016, Revision 1, Figure 1, with moderation control (drain holes) the limit of 2 kg. U 235 is safe.

e. Fiberboard Sleeves - Figure 19, Page 72

A fiberboard sleeve is used for finished fuel plates prior to element assembly. The inside diameter of the sleeve is 4.5 inches. The sleeve is open at both ends, and therefore will not hold any water. This moderation control permits the safe handling of fuel plates with a mass limit of 2 kg. U 235 per sleeve as per TID-7016, Revision 1, Figure 1.

f. Rod Racks - Figure 19A, Page 72A

The rod rack is used to transport and store low enrichment rods. It cannot retain water. There is no mass or geometry limit for U-235 of low enrichment in the rack. As per TID-7016 Revision 1, Page 24 this moderation control is safe.

5. Transfer and Operating Procedures

The transfer of special nuclear materials between criticality and storage stations, will be made in accordance with the following rules:

CART
IN-PLANT TRANSPORTATION

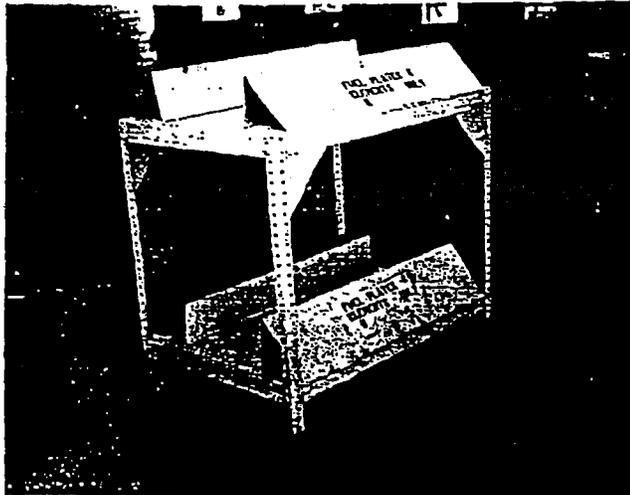
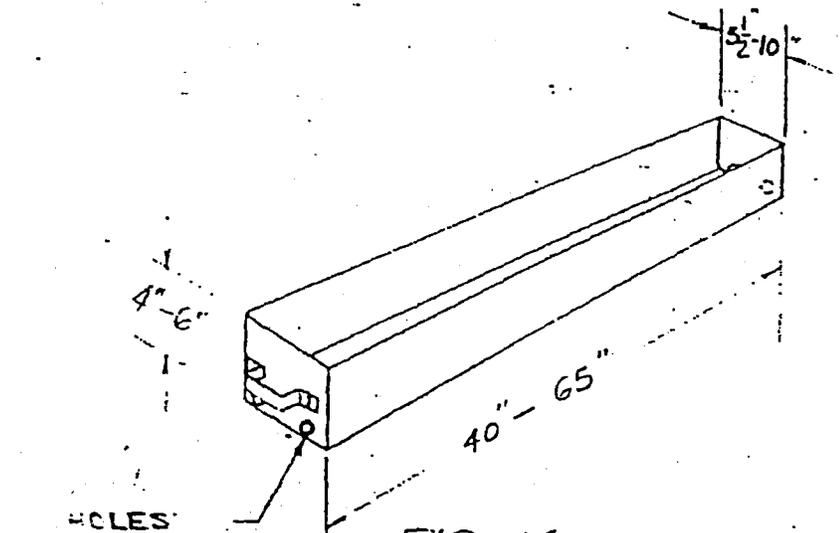
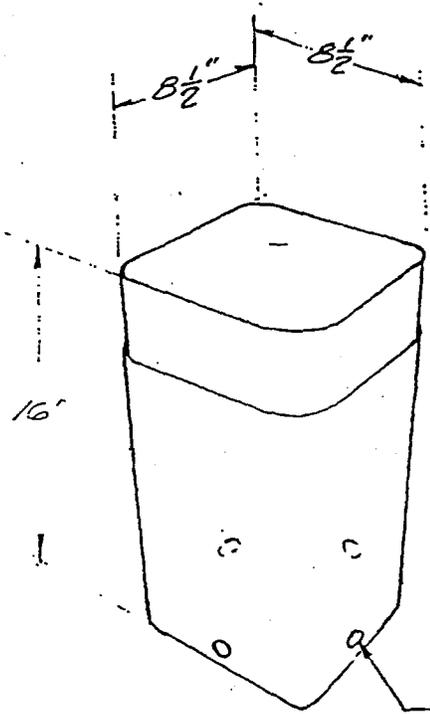


FIGURE 15



HOLES
 IN END - BOTTOM
 ARE TO BE AT
 EDGE OF PAN
 1/2" DIA

FIG. 16
 PANS, TOTE
 SEVERAL SIZES - DIMENSIONS
 INDICATE MAXIMUM AND
 MINIMUM SIZE



$\frac{3}{4}$ DIA. HOLE - EACH SIDE
 BOTTOM OF HOLE IS AT
 TOP EDGE OF BOX BOTTOM.

FIG. 18
BOX, CORE

A 33545

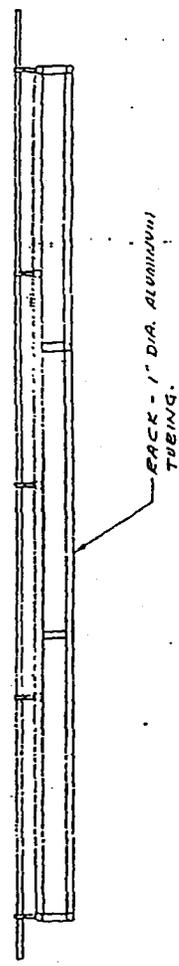
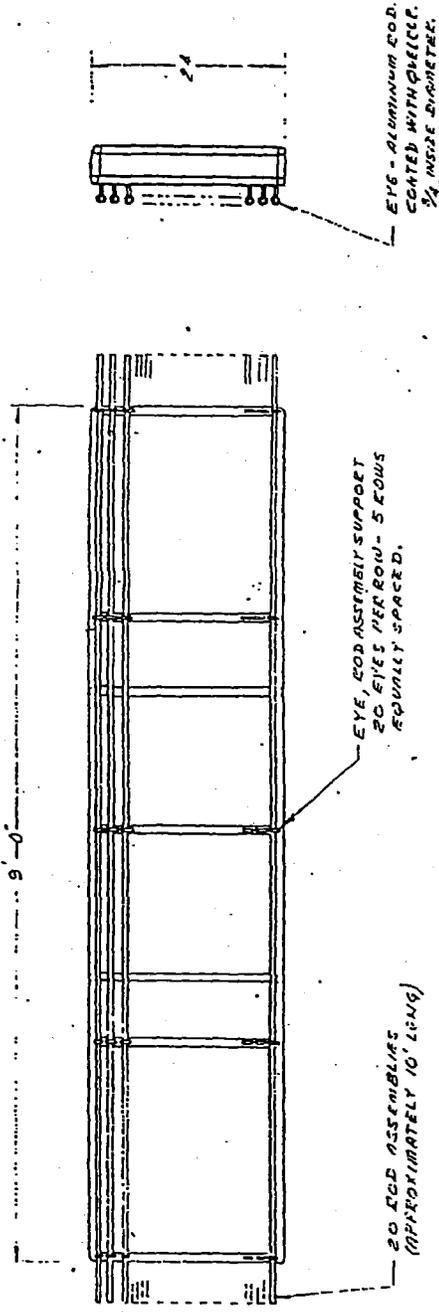
ISSUE 1 1/1/56

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DATE JAN 1956

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ITEM NO.	DESCRIPTION	QTY	UNIT	ITEM NO.	QTY	UNIT
<p>NAME: RACK, MATERIAL HANDLING</p> <p>SYLVANIA ELECTRIC PRODUCTS INC. 44 17A Sylvania Sycor Division WARREN, N.Y. PAGE 1A-1</p> <p>SCALE: N7S</p> <p>DATE: 1/1/56</p> <p>NO. B 34680</p>						

- VI.D.5.
- a. Only one control batch can be at a criticality station at one time.
 - b. Transfers to and from a station may be made only by the designated operator of that station.
 - c. The contents of the control batch may be worked on only within a criticality station.
 - d. All of the original contents of the control batch (including the scrap generated by the operations, but not including nominal process losses) will be removed from the station before a second batch is brought into that station.
 - e. At no time can more than one container with highly enriched special nuclear material be transferred by an individual unless the approved cart is used. (See Figure 15, Page 68)
 - f. The movement to or from criticality stations of fuel assemblies does not necessarily require the use of a container. Only one fuel assembly is hand carried at one time. At no time can the number of fuel assemblies within the station exceed that number specified for a control batch in the Criticality Limit Report.
 - g. Transfers to and from high limit stations are permitted only as normal limit control batches. This regulation assures that any accidents during transfer will involve only a single normal limit batch.
 - h. No operation may be performed which would change the form of the material to a form which would reduce the criticality

VI.D.5.h.

limit of the control batch beyond its initial mass limitation. If the form of the material must be so changed, the control batch must be readjusted to the lower value by a designated accountability representative prior to the operation.

- i. It is necessary from many manufacturing steps to transfer a single component of a batch. A single plate may be taken from one criticality station to another to perform tests, do inspections, or to sample. Each individual transfer to and from a criticality station is permitted by authorized personnel.

d. Production Operations Special Nuclear Considerations

There are some production operations that require special nuclear safety considerations due to the design of equipment or the nature of the operation.

1. Melting

Melting operations are performed in two types of induction heated furnaces, open air and controlled atmosphere or vacuum furnace. These furnaces have internal water coil cooling and are in a sprinklered area. Although an unnoticed rupture of the water cooling coils is extremely unlikely, such an occurrence is possible and has been analyzed. In order to assure an always safe condition, the excusable size will be limited to the following dimensions:

6 inches inside diameter and 30 inches high

VI.E.1.

These crucible dimensions assure an always safe geometry even when completely flooded and fully reflected. The mass limit for the melting operation, as specified in Appendix B, is 2 kg. U-235. The nuclear safety justification for this limit is based upon the following:

An H/X less than 20 - TID-7016, Revision 1, Figure 1

An H/X greater than 20 - K-1019, Revision 5, Table 15

2. Hot Rolling Ingots

The mass limitation in the hot ingot rolling operation, by virtue of the relatively massive form of the uranium alloy, can be substantially greater than that in other sections of the plant.

Starting at a size of 2 inches x 6 inches x 14 inches, the ingot is rolled into a slab 0.3 inches x 6 inches x 8 feet. Up to three control batches of uranium-aluminum alloy are permitted in the hot ingot rolling furnace. This is equal to a maximum of three pieces each containing a maximum of 2 kg. U-235. The pieces lay flat on the furnace bed. They are not stacked. Only one ingot at a time is removed from the furnace and passed through the rolling mill. There are two ingot-heating furnaces and they are separated center to center by 12 feet. Three ingots are permitted in each of the furnaces. Each ingot is handled as a completely separate control batch outside of the furnace. The furnaces are a flat hearth type, are not water cooled and contain no other sources of moderating materials. They stand three feet off of the floor and flooding is not

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FEDERAL BUREAU OF INVESTIGATION

VI.E.2. considered credible. Moderation control permits the use of TID-7016, Revision 1, Figure 1, for an H/X of less than 2.

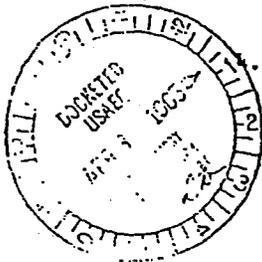
3. Hot Rolling Plates

The rolling mill and heating furnaces are separate criticality stations. The material must be transferred between these two stations one plate at a time. In order to make effective use of the rolling mill, it is desirable that more than one control batch be present in the furnace at a given time. Two or more control batches are only permitted within the furnace if the total combined mass of the batches is less than 5 kg. U-235 (See Appendix B). The furnace is of a flat hearth type, having no water cooling or other sources of moderating material. Flooding is not considered credible. The heating of fuel plates in this furnace requires the use of racks which distribute the fuel into a potentially reactive geometry if an effective moderator is present. (See Figure 20, page 77) The racks are made of wire or sheet metal stock and will not retain water. The furnace racks are not removed from the furnace. The Appendix B maximum batch size is 5 kg. U-235. With the moderation control, this mass is safe as per TID-7016, Revision 1, Figure 1. Material transfers to and from the furnaces follow VI.D.5.g., page 73.

Powder Weighing, Blending and Compacting

a. Weighing

Dry uranium ceramic powders such as UO_2 and U_3O_8 are received in a birdcage containing up to 10 kg. of U-235 in a plastic bottle with a maximum capacity of 3.6 liters. One such bottle



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R-1

Page 76A

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is brought into a sealed glove box where the powders are weighed into small batches. The glove box contains no water or other moderating materials. As per TID-7016, Revision 1, Figure 1, the 10 kg. U-235 in dry form (H/X less than 2) is safe.

b. Blending

The smaller U-235 weighed batches are inserted into bottles containing stainless steel, aluminum, boron, etc., powders. Up to six such bottles are placed into a blending container. The blending container has a maximum volume capacity of 4.17 liters. The U-235 mass limit for the blending container is 1 kg. U-235. The blending container is water tight when sealed and is always sealed when being moved and when it is on the blender. As per TID-7016, Revision 1, Figure 2, the 4.17 liter capacity of the blending container is safe for the powders.

c. Compacting

After blending, the blending container is brought to the compacting hood. This hood is enclosed on five sides and contains no water or other moderating materials. The container is opened in the hood and bottles containing up to .33 kg. U-235 are removed for compacting. After each batch of U-235 (maximum of .33 kg.) is compacted it is placed into a plastic box for in-process storage or sintering. When it

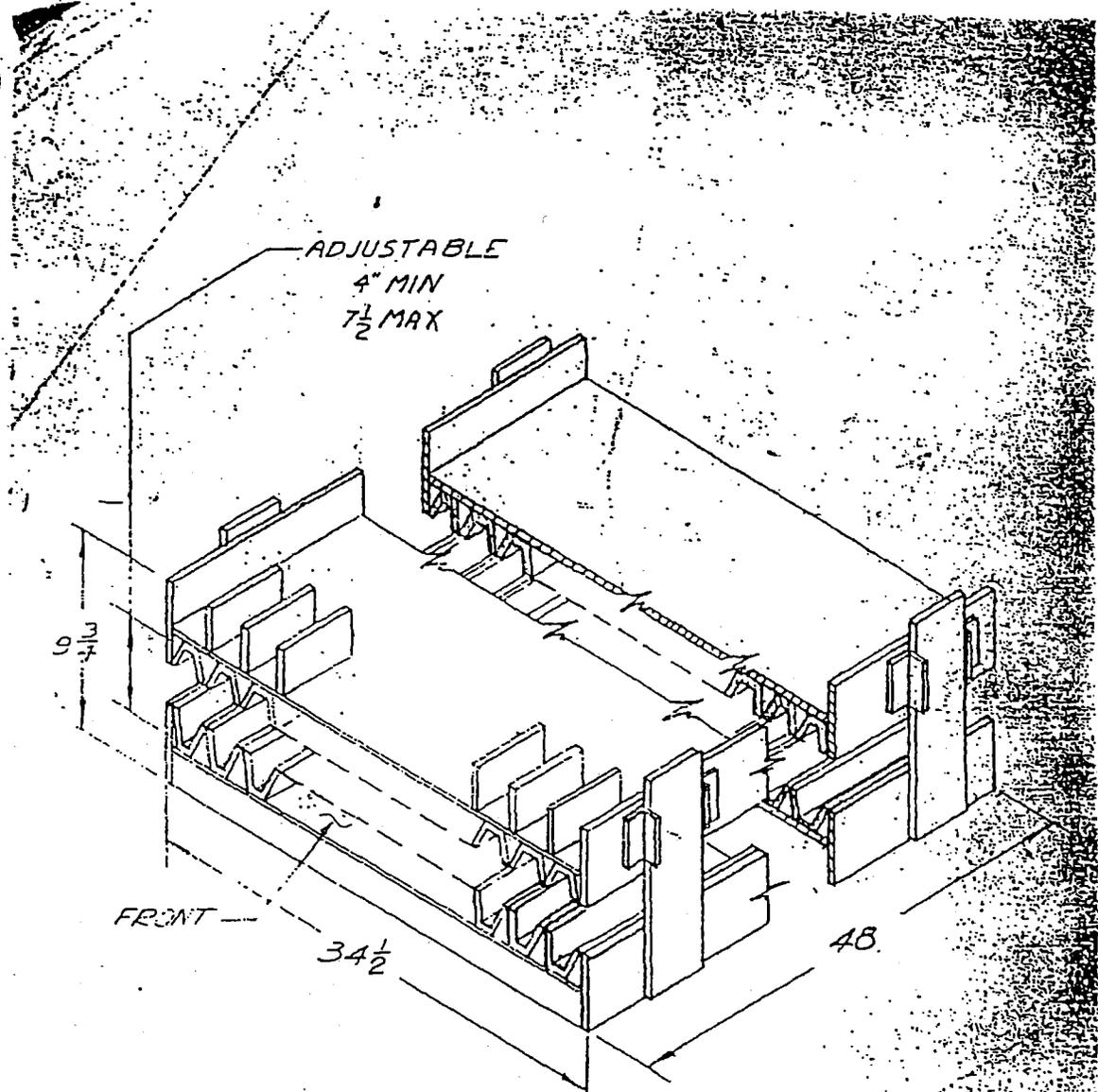


FIG. 20
 SKETCH OF FURNACE RACK
 (HOT ROLLING)

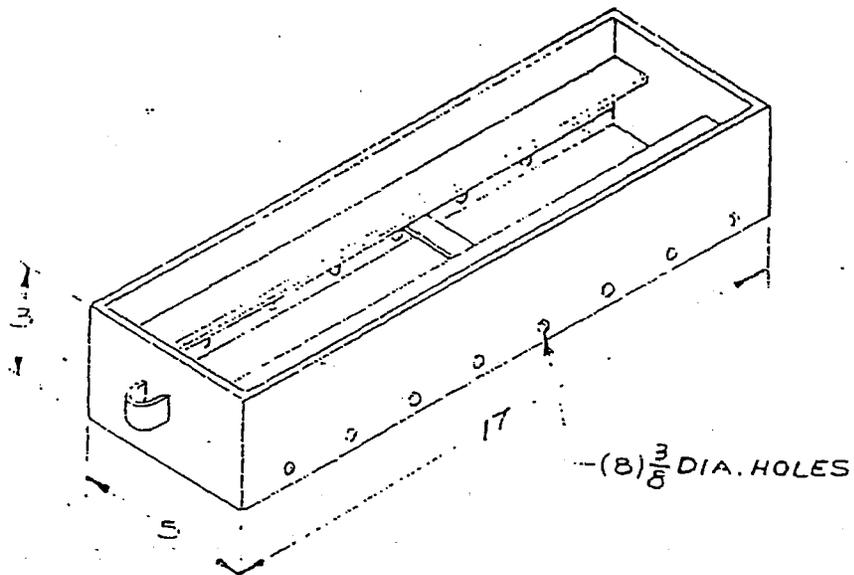
A-2354

STEEL DIVISION
 SYSTEMS GROUP
 CONTROL GROUP
 ELECTRICAL GROUP

has been removed from the compacting area, another batch (maximum of .33 kg.) of U-235 is removed from the blending container. As per TID-7016, Revision 1, Figure 2, the 4.17 liter capacity of the blending container is safe and as per Figure 1, the .33 kg. batch size in the compacting press and after compacting is safe.

5. Sintering

Uranium ceramic powders, with a maximum mass of 0.33 kg. U-235, are mixed with other metal powders such as stainless steel. Each 0.33 kg. U-235 mass is considered as a separate control batch. After cold compacting, the next operation is sintering. The sintering operation is conducted in a vacuum furnace. One control batch (0.33 kg. U-235) of pressed unsintered cores will be brought to the furnace and loaded into the boat. (See Figure 21, page 79) Then a second control batch is handled in the same manner. This is repeated until 5 kg. of U-235 is loaded into one or two boats. The boats have many drain holes around the base and therefore cannot retain water. The cores are stacked into the boats up to the height of the side walls, 2.5 inches.



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FIG. 21
COMPACT SINTERING BOAT

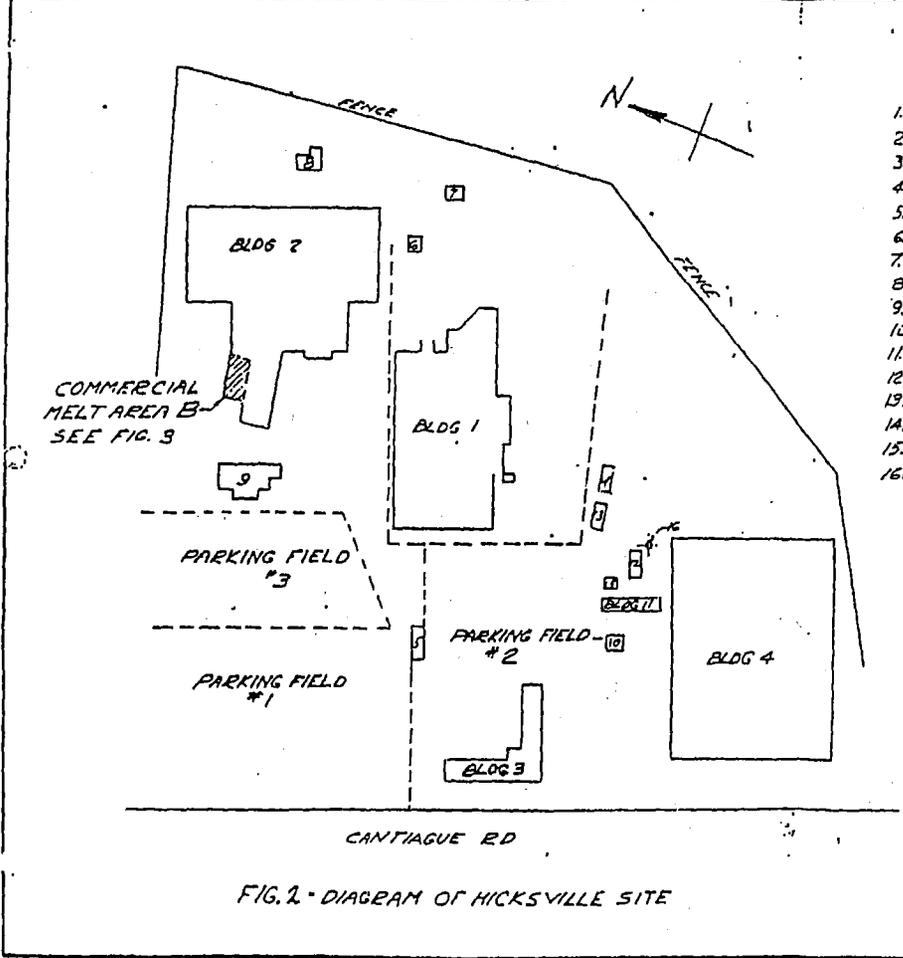
NO. 1004 TO FIGURES
UNLESS OTHERWISE SPECIFIED
DEC DIMS. 1 PRAC DIMS. 2 ANGULAR DIMS. 3

DETAILED COMMERCIAL STAGE
SIZES AND MANUFACTURERS
TOLERANCES ARE NOT INCLUDED

REVISIONS
BY DATE
BY DATE

NUMBER
B33533

ISSUE:



- LEGEND**
1. REC ADMINISTRATION & PRODUCTION
 2. REC & COMMERCIAL PRODUCTION
 3. COMPANY ADMINISTRATIVE OFFICES
 4. COMMERCIAL PRODUCTION
 5. MAIN GUARD HOUSE
 6. SOLVENT & OIL STORAGE
 7. PUMP HOUSE
 8. BURNING & CHEMICAL PROCESSING
 9. FARM HOUSE
 10. SPECIAL NUCLEAR MATERIAL STORAGE (LONG TERM)
 11. GAS STORAGE
 12. ISOSTATIC PRESSURING
 13. SPECIAL NUCLEAR MATERIAL STORAGE
 14. CONCRETE STORAGE PAD
 15. UTILITY SHED
 16. FIRE HYDRANT & HOSE HOUSE

PAGE 15

FIG. 2 - DIAGRAM OF HICKSVILLE SITE

REV	DESCRIPTION	DATE	DWG NUMBER	TYPE	REVISION ASSEMBLY
MATERIAL	NAME SYLOR SITE LAYOUT				
WAST TREATMENT	HICKSVILLE, N.Y.				
FINISH	SYLVANIA ELECTRIC PRODUCTS INC Sylcor Division Hicksville, N.Y.				
AGE APPR	DESIGN BY	CHECK BY	SCALE	NUMBER	
DATE	DATE APP.	DATE APP.		B33533	

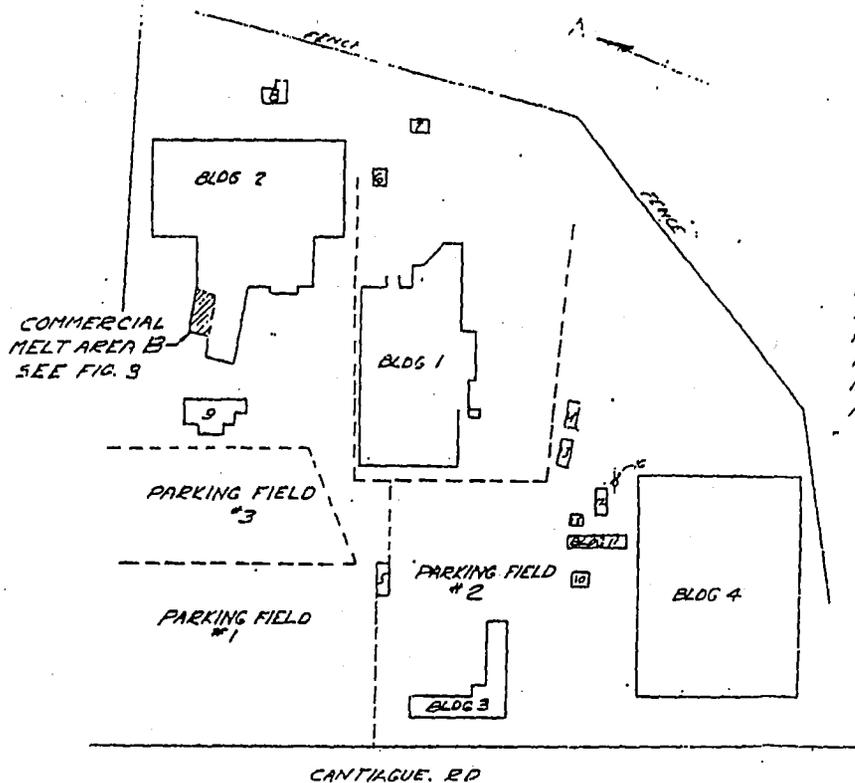
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NO. 1 WORK TO FIGURES
TOLER. AS PLACED OTHERWISE SPECIFIED
SEE PLAN 4 PAGE, DIMS 7 ANCHOR DIMS 8

SCALE: 1" = 40'
DATE: 11/15/53

NUMBER

ISSUE:



LEGEND

1. AIR FLOWMETER STATION & PRODUCTION
2. REC. COMMERCIAL PRODUCTION
3. COMPAN. ADMINISTRATIVE OFFICES
4. COMMERCIAL PRODUCTION
5. MAIN GUARD HOUSE
6. SOLVENT & OIL STORAGE
7. PUMP HOUSE
8. BURNING & CHEMICAL PROCESSING
9. FARM HOUSE
10. SPECIAL NUCLEAR MATERIAL STORAGE (LONG TERM)
11. GAS STORAGE
12. ISOSTATIC PRESSING
13. SPECIAL NUCLEAR MATERIAL STORAGE
14. CONCRETE STORAGE PAD.
15. UTILITY SHED
16. FIRE HYDRANT & HOSE HOUSE

FIG. 2 - DIAGRAM OF HICKSVILLE SITE

PAGE 15

REV.	DESCRIPTION	DATE	DRG NUMBER	FIG.	NEXT ASSEMBLY
MATERIAL		NAME SYLOR SITE LAYOUT			
HEAT TREATMENT		HICKSVILLE, N.Y.			
FINISH		SYLVANIA ELECTRIC PRODUCTS INC Sylcor Division Hicksville, N.Y.		FIG. 2	
SEC APPR.	DRWN BY	CHKD BY	SCALE	NUMBER	
DATE	EDG'D BY	DATE APP.		B39533	

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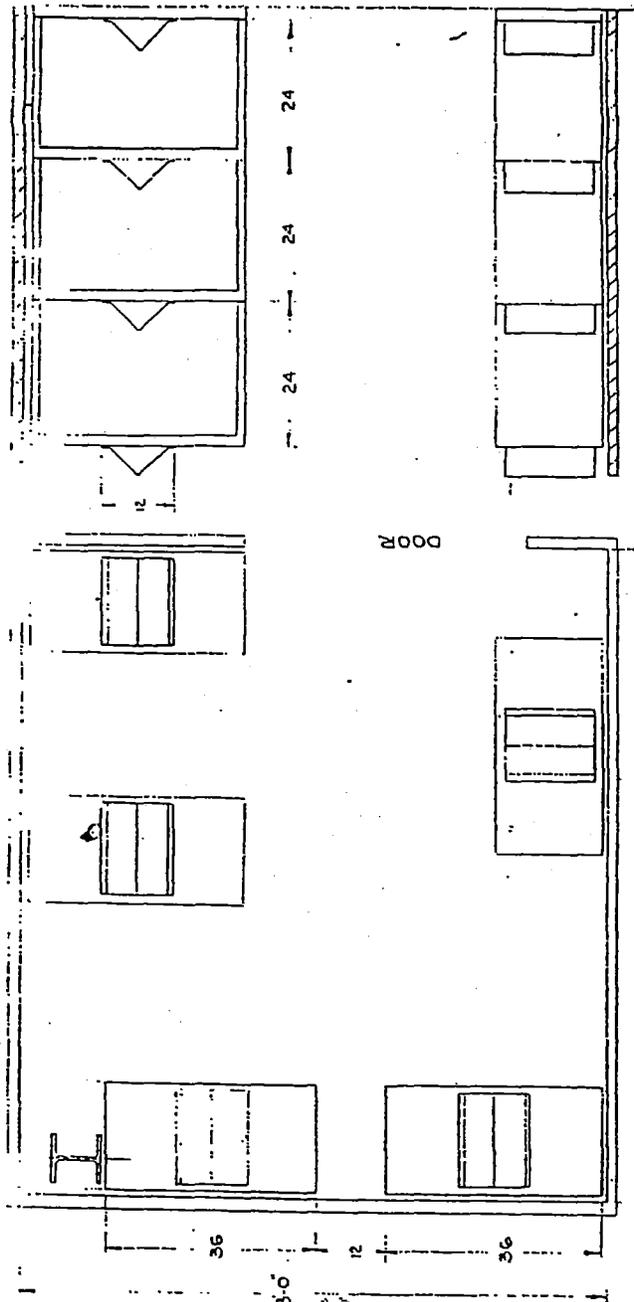
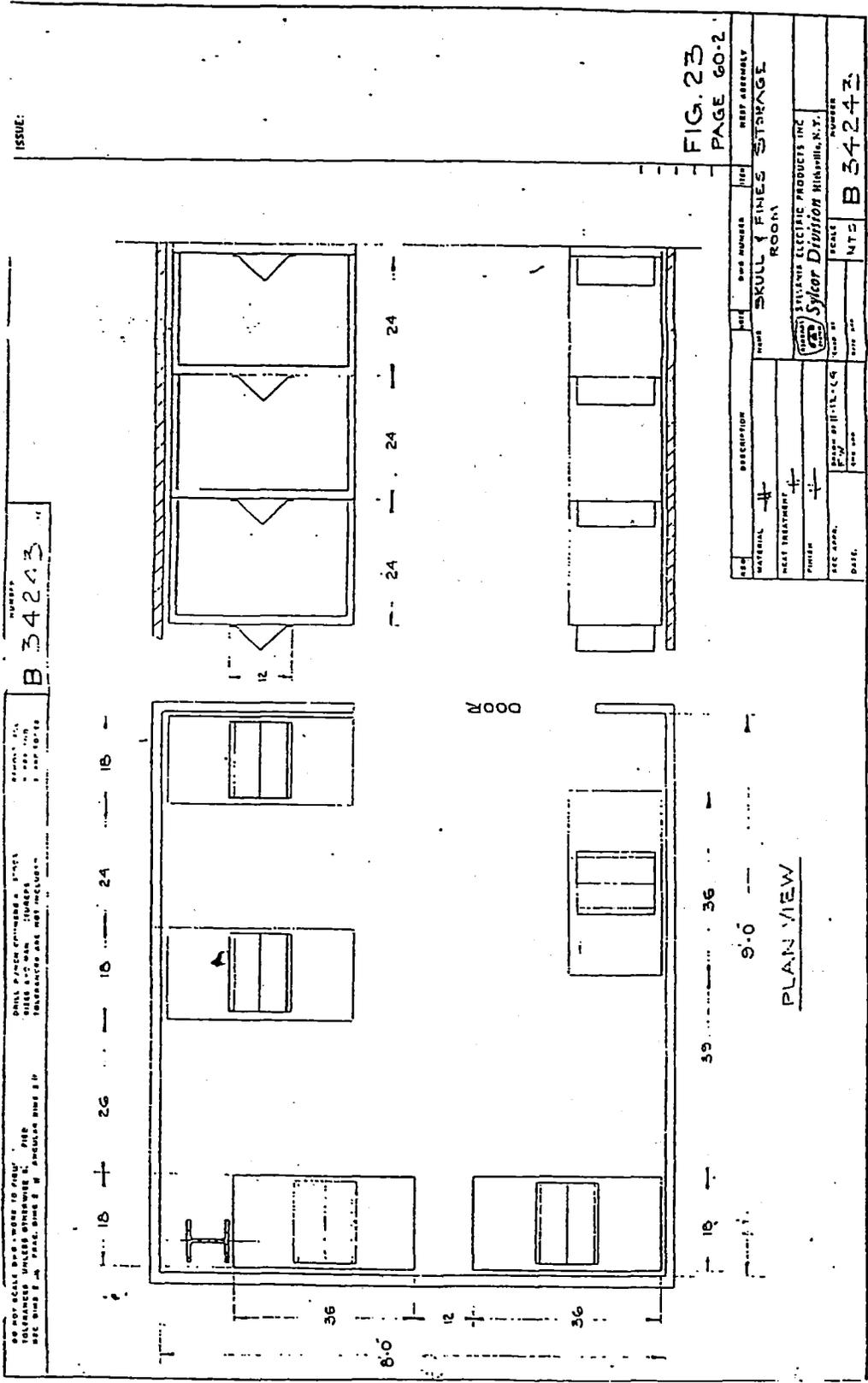


FIG. 23
PAGE 60-2

ITEM	DESCRIPTION	QTY	UNIT	EST. NUMBER	EST. ASSEMBLY
					ROOM
					SKULL & FINES STORAGE
GENERAL ELECTRIC PRODUCTS INC. Sytor Division BIRKBECK, N.Y.					
SCALE	DATE	BY	CHKD BY	NO.	NTS
					B 34243



ISSUE: B 34243

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FIG. 23
PAGE 60-2

NO.	DESCRIPTION	QTY	UNIT	DATE	BY
1	MATERIAL	1	SKULL & FINES ROOM		
2	NEAT TREATMENT	1			
3	FINISH	1			
4	SEE APP. 1	1			
5	DATE				

PLAN VIEW

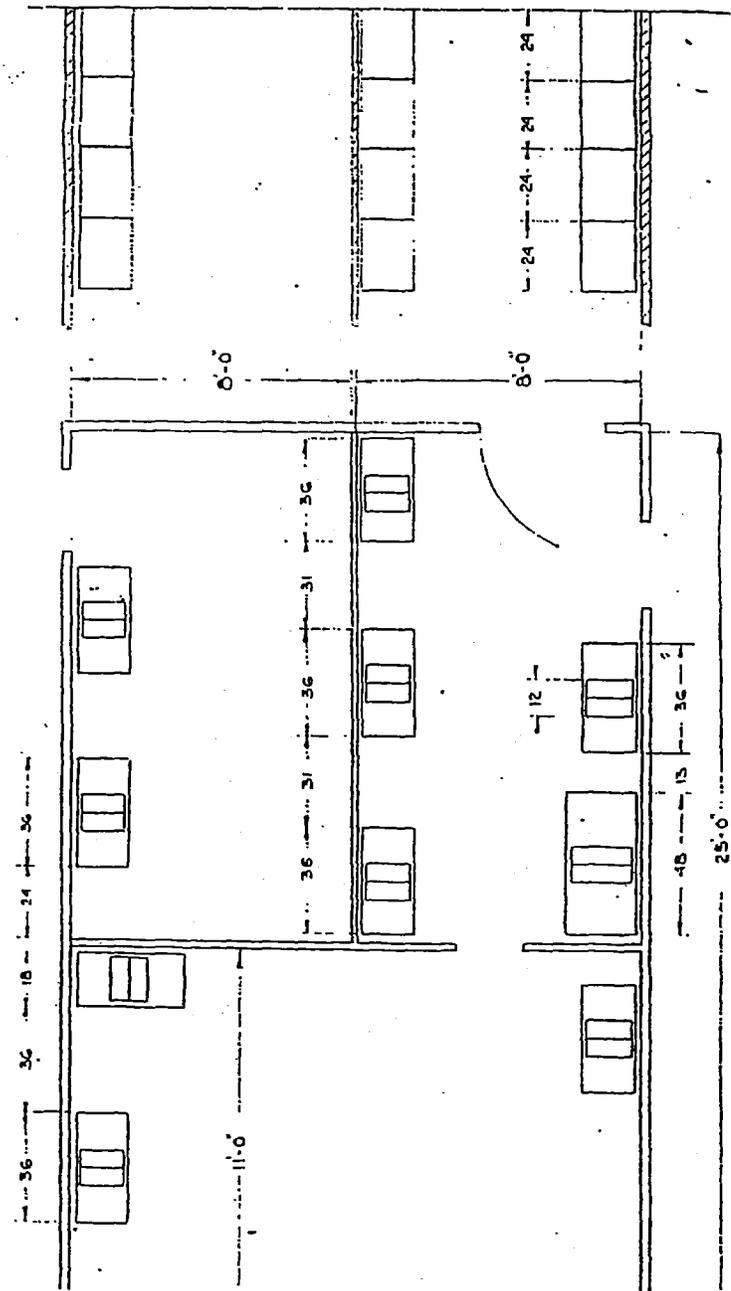
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REV. 1
B 34244

ISSUE



PLAN VIEW

FIG. 24
PAGE 60-3

REV.	DESCRIPTION	DATE	BY	APP. NUMBER	DATE	BY	APP. NUMBER
1	SCRAP STORAGE AREA						
	MATERIAL						
	HEAT TREATMENT						
	FINISH						
	DATE						
SYLVANIA ELECTRIC PRODUCTS INC. Sylcor Division MIDDLETOWN, N.J.				SCALE	DRAWING NUMBER B 34244		

GTE 00000370

VI.E.5.

The boats are not stacked in the furnace. Between each layer of cores are either strips of molybdenum foil or stainless steel mesh. This is to provide proper heat conductivity. When the furnace is loaded the door is closed and clamped shut. The furnace has a flat hearth and stands about $3\frac{1}{2}$ feet off the floor. Flooding is therefore not considered credible. There are no sources of moderating materials in the furnace chamber. With this moderation control the furnace limit of 5 kg. U-235 is safe as per TID-7016, Revision 1, Figure 1. After sintering up to six of the .33 kg. batches are combined to form one manual control batch of 2 kg. U-235.

6. Plate Annealing

In order to increase the capacity of the annealing furnaces, it is desirable to handle more than one control batch (2 kg. U-235) in a furnace. These furnaces have a flat bed and have no water connections, nor do they contain any sources of moderating material. One control batch (maximum of 2 kg. U-235) of plates is brought to the clamping table. The plates are then stacked in the jig. Then a second control batch will be brought to the station. This will be repeated until a maximum of 5 kg. of U-235 is clamped into the jig. The jig will then be placed in the furnace. These plates are essentially a single mass when clamped in the jig. Even if flooded the H/X ratio would be small (less than 10). This ratio permits a total mass limit of 5 kg. U-235 in the furnace as per TID-7016, Revision 1, Figure 1.

VI.E. 7. Chemical Cleaning and Stripping Acids & Caustics

The maximum quantity of high enrichment U-235 in a control batch for these operations is 0.33 kg. and for low enrichment .8 kg. U-235 as per Appendix B. When in use, all solutions which could possibly contain uranium will be sampled daily. The tanks containing the solutions will be agitated prior to the sample collection. The samples will be counted in a gamma scanner and checked against established standards. Any solutions containing uranium will be saved for either disposal or recovery through a licensed vendor.

a. Chemical Cleaning

In the chemical cleaning operations every effort will be made to insure that the solutions do not etch deep enough to dissolve any of the uranium alloys. If clad penetration is observed (exposure of metal is very obvious) when the material is removed from the solution, an evaluation will be made in order to determine the amount of dissolved U-235. This will be done before any further etching is performed.

The high enrichment cleaning tanks are of two sizes:

5 cubic feet volume (142 liters) 5 feet x 1 foot x 1 foot

6 cubic feet volume (170 liters) 6 feet x 1 foot x 1 foot

They are constructed of .085 inch thick stainless steel and are a minimum of 30 inches off the floor.

b. Chemical Stripping

During the chemical stripping operation, the cladding is removed by dissolution until the uranium alloy is exposed.

VI.E. 7. Chemical Cleaning and Stripping

The maximum quantity of U-235 in a control batch for these operations is as listed below and in Appendix B. Solutions will be agitated prior to sample collection. The samples will be counted in a gamma scanner and checked against established standards. The maximum allowable uranium concentration is 5 grams per liter. Any solutions containing uranium will be saved for either disposal or recovery through a licensed vendor.

a. Chemical Cleaning

Operations where the solutions used would take two or more hours to dissolve through the cladding are limited to 1 kg. of U-235 in a tank. An example of this type of operation is bright dipping stainless steel clad U-235 plates in nitric acid. As per TID 7016, Revision 1, Figure 1 for metal water mixtures the 1 kg. of U-235 in metal form is safe.

Operations where the solutions used could dissolve through the cladding within two hours, are limited to 500 grams of U-235 in a tank. An example of this type of operation is etching the surface of aluminum clad U-235 plates in a caustic. As per TID 7016, Revision 1, Figure 1 for metal water mixtures the 0.5 kg. of U-235 in metal form, and the 5 grams U-235 per liter in solution is safe.

Prior to the chemical cleaning operations, the fully clad material is inspected to remove those pieces that have surface cracks or holes. Only that material whose cladding integrity is not breached is chemically cleaned. If clad

VI.E.7.a. penetration is observed when the material is removed from the solution, an evaluation will be made in order to determine the amount of dissolved uranium. This will be done before any further cleaning is performed. Both of the above operations are attended at all times by fully trained personnel.

b. Chemical Stripping

During the chemical stripping operation, the cladding is removed by dissolution until the uranium alloy is exposed.

VI.E.7.b.

The plates are counted and recorded in and out of the tanks. Each batch must balance out before a new batch is started. Any discrepancy in balancing requires an immediate report to the supervisor and that tank and solution is not used until the missing plate is found. If the plate is not found, the solution is held aside until samples are taken and a determination of uranium content is made. Each plate is visually examined and, if significant uranium is exposed, a quantitative analysis is performed immediately. After each 2 kg. of contained U-235 has been processed through the dissolution tank, a quantitative assay will be performed. If the concentration of uranium is greater than 3 grams per liter, or the total uranium content is greater than 100 grams, the solution will be removed from operations for proper disposal.

A highly loaded single fuel plate seldom contains more than 20 grams of U-235. An average plate loading is approximately 12 grams. The chemical milling rack holds a maximum of 14 plates. Consequently, should two rack loads of such highly loaded fuel plates be inadvertently dissolved, the maximum amount of dissolved U-235, even in the smallest volume bath (140 liters) would result in a maximum of less than 5 grams U-235 per liter. Therefore, there is an inherent safe limit control on this process, even after a double failure to follow procedures.

VI.E.7.b.

All chemical stripping is done in specifically assigned tanks. These tanks have the following dimensions and volume:

4 cubic feet volume (116 liters) 4 feet x 1 foot x 1 foot

6 cubic feet volume (170 liters) 6 feet x 1 foot x 1 foot

They are constructed of .085 inch thick stainless steel and are a minimum of 30 inches off the floor.

8. Off Site Operations

There are occasions when it is necessary to have some operations (that involve U-235) performed off the Hicksville site. These occasions will be as infrequent as possible. They will involve the following:

a. Chemical Samples

Any laboratory used for chemical analysis of U-235 will have an AEC special nuclear material license. When it is necessary to send sample amounts of uranium bearing material to an independent laboratory for analysis, the maximum amount of U-235 will be 350 grams. At no time will more than 350 grams of U-235 be at the laboratory at one time. All material sent to an independent laboratory for analysis is returned to Sylcor. Liquids with a maximum U-235 concentration of 5 grams per liter are collected in polyethylene lined drums for eventual shipment to a reprocessor (Ref. Section VII.C.).

b. Other operations such as nondestructive testing may be performed on U-235 bearing materials, providing that all of the procedures in this section are followed. Uranium or uranium containing alloy will be completely clad in aluminum or other material. No operation will be performed which could result

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VI.E.8.b.

in any of the uranium being removed from the item. Work may be performed by Sylcor personnel or the vendor's personnel, but will in any case be under the direct supervision and control of Sylcor technical personnel. The amount of uranium will be less than 500 grams of contained U-235 at any one time. There will be no other special nuclear material present at the vendor's plant at the time when this work is performed. No overnight storage will be allowed at the vendor's facility. The uranium will be returned to Sylcor's plant the same day that it is shipped. Shipments to and from vendors will be hand carried by a Sylcor employee.

9. Scrap and Wastes

The usual production operations do not result in machine turnings, chips or other machining fines. During infrequent occasions there may be some machining. When this is done, the scrap produced will be limited to containers with a maximum U-235 content of 0.33 kg. for high enrichment materials and 0.8 kg. for low enrichment material. All scrap and waste is handled with mass limits as appropriate for the forms as listed in Appendix B.

- a. Solid scrap consists of cores, plates, trimmings from core punching and slab shearing, slag from melts, etc., are limited to 2 kg. U-235 per container. This material is temporarily stored and transported in melt trays. (See Figure 17, page 70) It is used to make up new melts for ingots.
- b. Fines, turnings and chips are limited to 0.33 kg. of high enrichment U-235 and 0.8 kg. low enrichment U-235.

VI.E.9.b.

in plastic bags. All of these materials are stored at an in-process storage station alongside of the accountability area. These materials will be packaged in the scrap shipping container by accountability representatives as per Section VII.D. of this license. The loaded containers may be temporarily stored in the shipping-receiving area prior to shipment. It will be stored in a linear array at least 12 feet from any other U-235 which also must be in a linear array. This is in accordance with page 27 of TID-7016, Revision 1.

- c. Dry wastes such as contaminated rags, paper, plastic, wood, broken glassware, etc., are disposed of by packaging in 55-gallon drums. When a truck load has been accumulated (approximately 50 to 60 drums) it will be shipped to a licensed commercial contaminated waste disposal site. Based upon past experience, it takes approximately 12 to 24 months to accumulate this volume. The materials disposed of in this manner do not contain enough U-235 to warrant recovery. It is estimated that each drum contains less than one gram U-235.
- d. Liquid wastes consist of chemical stripping caustics and chemical analysis wastes. All solutions contain sufficient electrolyte in form of caustic or acid to lower the freezing point to below 0°F. Therefore, even with outside storage at Sylcor's site it precludes the possibility of freezing. They

VI.E.9.d. are stored in 55-gallon drums with a maximum concentration of 5 grams of U-235 per liter, and a minimum H/X ratio of 5200 as per TID-7016, Revision 1, Figure 1. This is a safe limit.

The chemical stripping caustic wastes may be filtered in order to reduce the volume to quantities that can be more reasonably handled. When the analysis for a tank of caustic solution indicates the presence of uranium (Ref. Section VI.E.7, page 81) it is recorded by the accountability department. The solution is temporarily stored in 55 gallon drums with a minimum H/X ratio of 5200 and a maximum concentration of 5 grams of U-235 per liter.

The caustics will be filtered with a maximum of 95 grams of U-235 per set of filters. This filtering is under the strict surveillance of the Safety Department. The Safety Department based upon the analysis of each tank and drum, schedules the sequence of filtering. The filters and sludge containing the U-235 is packaged in 5-gallon cans. The maximum concentration will be 5 grams per liter of U-235, with a minimum H/X ratio of 5200. The material will first be inserted into plastic bags and then into the 5-gallon cans. The 5-gallon can will then be inserted into a 15-gallon drum meeting 17H of IFC specification. The space between the can and drum will be filled with vermiculite.

VI.E.9.d. The chemical analysis wastes will be packaged in 5-gallon cans with a 2S polyethylene liner. It will then be packaged in a 15-gallon drum meeting 17H or 17C specifications. The space between the can and drum will be filled with vermiculite. The maximum U-235 per container will be 95 grams. The maximum concentration will be 5 grams per liter of U-235, with a minimum H/X ratio of 5200.

10. Non-Destructive Testing

The limit for water tanks is .33 kg. of U-235. In accordance with TID 7016, Revision 1, Figure 1, this is a safe limit.

11. Isostatic Pressing

Up to 4 kg. of U-235 in the form of rods, plates or tubes may be placed within the isostatic pressure vessel at one time. The maximum inside diameter of the container is 5 inches. As per TID 7016, Revision 1, Figure 1, the 4 kg. mass limit for an H/X of 0 to 15 is safe. The 5 inch diameter of the container is safe for an H/X greater than 15 as per Figure 3.

MISSION TIME
SHIPPING

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VII. SHIPPING

The forms of special nuclear material to be shipped are fuel elements, fuel plates, fuel plate components, scrap and on occasion, raw material. All shipments will be made either to U.S. Atomic Energy Commission facilities or other U.S. Atomic Energy Commission special nuclear material licensees.

A. Commingling Control

Unless otherwise stated in Section VII of this renewal application, certificates of non-commingling will be obtained for all special nuclear material shipments. The steps that are taken to prevent commingling of Sylcor shipments with special nuclear material shipments of others is as follows:

1. Routes will be established from the Sylcor Hicksville, New York, site to the customer's or recipient's site.
2. An appropriate non-commingling certificate (see Appendix F) will be obtained from an authorized agent of each carrier and terminal involved with the established route.
3. When a route is to be used frequently, assurances will be obtained from those carriers and terminals involved that no routing changes can be made without prior Sylcor approval.
4. When intermediate unloading is involved, special arrangements will be made to insure against commingling. An approval for such arrangements will be requested of the U.S. Atomic Energy Commission.

B. Raw Material

On occasion, raw material uranium metal and/or uranium oxide will be

VII.B. returned to a vendor. Special approvals will be obtained from the U. S. Atomic Energy Commission when such occasions arise.

C. Solutions

Uranium containing solutions will be placed in 2S polyethylene liners within either 5 or 15-gallon drums (I.C.C. specification 5B or 37A or 37P). This drum is then placed inside a larger drum (I.C.C. specification 17H or 17C). The solutions will have a maximum concentration of 5 grams of U-235 per liter, and will have a minimum H/X ratio of 5200.

Chem milling and cleaning caustic solutions that contain U-235 may be filtered. The maximum quantity of U-235 to be processed through a single set of filters is 95 grams. This is strictly controlled by the Safety Department. The filters with the sludge are packaged in polyethylene bags and placed inside drums of I.C.C. 17H specification. This drum will then be placed inside a larger 17H drum. The space between the inner and outer drums will be packed with vermiculite. Each container will be limited to 95 grams of contained U-235 and the solutions will have a maximum concentration of no greater than 5 grams of U-235 per liter, with a minimum H/X ratio of 5200. By virtue of these limitations, any number of containers may be shipped and commingling procedures may not be followed.

VII. D. Alloy Scrap (Drawing D-32665, Figure 22, Page 91)

The U-235 density in the alloy will not exceed 3.2 grams per cc. Alloy scrap, chips, turnings, melt dross, crucible skulls, etc., will be packed in a 5 inch Schedule-40 pipe. This pipe has a length of 35 inches with a welded pipe cap at the bottom, and a bolted and gasketed flange at the top. The pipe is centered in a standard 55-gallon drum (I.C.C. specification 17H or 17C). This shipping container is shown in Sylcor drawing D-32665, Figure 22, page 91.

The 55-gallon drum will be drilled with four 2 inch holes within 2 inches of both the top and bottom flange (8 holes total), thereby permitting water to leak into the drums and preventing interaction in the event of flooding. If flooded with water, the holes in the drums will permit water to surround the central tube with sufficient thickness to poison any interaction between drums.

Before batches of scrap are placed in this pipe, the U-235 content and total weight of a batch will be established by the Accountability Department. The distance between the surface of one 5 inch diameter pipe and the nearest other unit is 17.5 inches. A drop test indicates that this could be reduced to 14.5 inches. With this in view, the separation from the center of one unit to the nearest surface of the next unit is 17.15 inches. As per TID-7019, Table IX, K is 0.58. As per TID-7015, Appendix 5, the maximum number of steradians is 3.2. Therefore, it is safe to ship ten of these drums in any array in one shipment.

VII. E. Elements

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VII. F. Container Testing - Appendix G

The scrap shipping drum (Figure 22, page 91) was loaded with approximately 55 pounds of inert material. This was an appreciably greater mass than would be encountered in any special nuclear material scrap shipment. The loaded drum, prior to locking on the drum cover, is shown in photograph #1. The drum was then completely closed with the drum cover bolted into place. It was then hoisted to the top of building #4. Photograph #2 shows the drum in free fall from the top of the building into the truck pit at the north side of building #4. The total height of the drop was approximately 24 feet. Photograph #3 shows the drum as it rested after the drop. The upper rim of the drum had collapsed for approximately 100° of its perimeter. This collapsing had permitted the cover to spring loose. The extent of the damage to the drum is more effectively shown in photograph #4. It can be seen that the inner cylinder has not been appreciably displaced.

Drum Dimensions

	<u>Before Drop</u>	<u>After Drop</u>
Space between inner sleeve & drum I.D.	8½ in. ± 3/8 in. for 360°	8 in. approx 90° 8½ in. for 270°
Drum height (without cover)	33-1/16 inches	31 in. for 100° 33-1/16 inc. for 270°
Inside diameter of drum	22½ inches	19½ in. for 90° 22½ in. for 270°
Overall weight of drum and contents	142 pounds	142 pounds

VII.F. The effectiveness of the drum as a safe container was not adversely affected. The schedule-40 pipe moved insignificantly. The spacing between it and the drum was altered by approximately 6% for 25% of the total spacing diameter. The loss of spacing extended down from the top of the drum for approximately 2 inches. The remaining 31 inches of the height retained its original diameter and maintained adequate container separation. As a result of this test, all Sylcor drums have been strengthened by using a 360° band of $\frac{1}{4}$ inch steel around the inside of the drum. The design in use at the time of the test included four 6 inch pads of steel welded to angle iron cross pieces which held the schedule-40 pipe in the center. The new design gives a more uniform distribution of the impact forces. As a result of this test, a conservative estimate of a 15% loss of spacing has been used to calculate nuclear safety limits. (Ref. Section VII.D.)

VII. G. Administration Controls

Prior to the use of any container, the Safety Department will survey it for radioactive material contamination by wipe tests. All containers must have less than one count per minute per 100 square centimeters for alpha. The Safety Department will also inspect all containers prior to closing for shipment for the following:

1. Gasket defects.
2. Compliance with U.S. Atomic Energy Commission, Interstate Commerce Commission and International Air Transport Association regulations.
3. Compliance with the restrictions indicated within this renewal application.

APPENDIX A

GENERAL TELEPHONE & ELECTRONICS CORPORATION
1963 ANNUAL REPORT

GTE 00000389



GENERAL TELEPHONE & ELECTRONICS CORPORATION/1977 ANNUAL REPORT

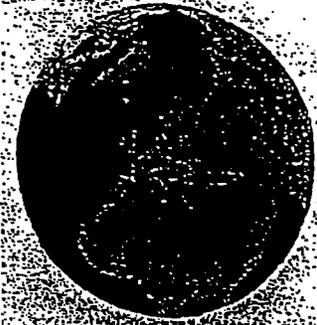
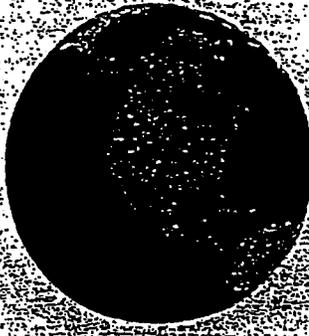
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General Telephone Building, 730 Third Avenue, New York, N.Y. 10017

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General Telephone Building, 730 Third Avenue, New York, N.Y. 10017

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Board of Directors

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CARL D. BROREIN, Tampa, Florida
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NELSON J. DARLING, JR., Boston, Massachusetts
Partner, Paine, Webber, Jackson & Curtis
THEODORE S. GARY, Miami Beach, Florida
Vice President, General Telephone & Electronics Corporation
GEORGE E. JONES, Los Angeles, California
Consultant, Mitchum, Jones & Templeton Incorporated
DONALD C. POWER, New York, New York
*Chairman of the Board and Chief Executive Officer,
General Telephone & Electronics Corporation*
JOHN B. PRIZER, Philadelphia, Pennsylvania
*Vice President and General Counsel,
The Pennsylvania Railroad Company*
RUSSELL B. STEARNS, Boston, Massachusetts
*Chairman of the Board,
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GEORGE H. STRUTHERS, Chicago, Illinois
*Vice President — Merchandising,
Sears, Roebuck and Co.*
GARDINER SYMONDS, Houston, Texas
*Chairman of the Board,
Tennessee Gas Transmission Company*
LESLIE H. WARNER, New York, New York
President, General Telephone & Electronics Corporation
RICHARD H. WEST, New York, New York
*Chairman of Executive Committee of the Board,
Living Trust Company*

Officers

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LESLIE H. WARNER, *President*
HAROLD C. CLERKIN, JR., *Executive Vice President — Telephone Operations*
JOHN S. MUGLAS, *Executive Vice President — Finance*
HARRIS F. TELLO, *Executive Vice President — Manufacturing*
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LEWIS H. MYERS, *Vice President*
GEORGE H. GAGE, *Vice President — Marketing and Sales*
THEODORE S. GARY, *Vice President*
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W. ROY JARMON, *Vice President — Revenue Requirements*
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HAROLD H. HOWLETT, *Secretary*
RALPH D. HEUSEL, *Treasurer*
RAYMOND E. DOLAR, *Controller — Telephone Operations*
CLAUD T. DOWNEY, *Assistant Secretary*
DANIEL McKENNA, *Assistant Secretary*
SHERMAN C. WILCOX, *Assistant Secretary*

Executive Offices:

General Telephone Building, 730 Third Avenue, New York, New York 10017

Transfer Agents:

Bankers Trust Company, New York, New York; Harris Trust and Savings Bank, Chicago, Illinois

Registrars:

The Chase Manhattan Bank, New York, New York; The Northern Trust Company, Chicago, Illinois

Comparative highlights	1963	1962	1961
Revenues and Sales			
Telephone	\$ 645,136,000	\$ 579,430,000	\$ 524,118,000
Manufacturing	798,301,000	748,495,000	702,466,000
Total	<u>\$1,443,437,000</u>	<u>\$1,327,925,000</u>	<u>\$1,226,584,000</u>
Consolidated Net Income	\$ 105,086,000	\$ 86,269,000	\$ 73,774,000
Earnings Per Average Common Share ...	\$1.38	\$1.15	\$1.00
Average Number of Common Shares			
Outstanding	76,079,000	74,611,000	73,287,000
Dividends Paid by GT&E			
Common Stock	\$ 63,637,000	\$ 57,418,000	\$ 53,728,000
Per Share	\$.84	\$.77	\$.76
Preferred Stock	\$ 407,000	\$ 486,000	\$ 599,000
Property, Plant, and Equipment			
Cost	\$2,723,293,000	\$2,497,413,000	\$2,263,714,000
Accumulated Depreciation	560,415,000	488,722,000	431,254,000
Net	<u>\$2,162,878,000</u>	<u>\$2,008,691,000</u>	<u>\$1,832,460,000</u>
Total Assets	\$2,746,533,000	\$2,563,593,000	\$2,377,278,000
GT&E Shareowners' Interest	\$ 941,924,000	\$ 882,992,000	\$ 841,875,000
Telephones in Service	5,635,000	5,303,000	4,999,000
Percent Dial Operated	98%	97%	94%
Number of Employees	97,000	92,000	91,000
Number of GT&E Common Shareowners	408,000	407,000	363,000



Chairman Donald C. Power holds recently-developed pushbutton telephone, typical of the General System's continued efforts to provide the best in modern communications service.

The chairman's letter

March 2, 1964

It is extremely gratifying to report that 1963 was an excellent year for the Corporation. New records were set in telephone revenues, manufacturing sales, and net income, reflecting the continued growing demand for our services and products.

Revenues and sales from the diversified operations of the General System exceeded \$1.4 billion, representing an increase of 9 per cent over the previous record set a year earlier. Consolidated net income reached a new high of \$105 million, which was 22 per cent ahead of 1962. Earnings of \$1.38 per common share also were the highest in our history.

Continued expansion of markets

Major gains were made in our domestic and international telephone operations, resulting in an 11 per cent growth in revenues and a 26 per cent increase in net income. The new record in manufacturing sales and the substantially higher net income from this portion of the System's operations reflected the continued expansion of the market for communications equipment, as well as the further strengthening of our position in the electronics business and related fields of activity.

With the economy of the United States showing every indication of continuing to advance in 1964, thus providing a strong base for the further growth and development of the General System's markets, we anticipate that the year will bring additional increases in revenues, sales, and net income.

Major advances in operations

In addition to reporting the new records in operating results which were achieved in 1963, it is important to review various major aspects of our operations which not only produced these new records but will help to determine the future course of our business. In the steadily broadening field of communications, the General System's more than 30 telephone

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companies made many significant advances in expanding and improving their services. The domestic and international telephones served by these subsidiaries totaled more than 5,635,000 at year-end, which represented an increase of 6 per cent over 1962 and an increase of more than 2,000,000 telephones in the past five years.

Further service improvements

This continued growth in number of telephones served was accompanied by further improvements in the quality of both local and long-distance service. More than 98 per cent of the System's telephones were dial-operated at year-end, and additional exchanges were converted to Direct Distance Dialing service during the year. A number of new services were introduced to our customers, particularly in the business market.

Reflecting the strong capabilities of the manufacturing companies in highly competitive fields of activity, important progress was made in the introduction of new and improved products, development of more efficient production techniques, and the broadening of market coverage.

Preparing for the future

To prepare adequately for the future in terms of scientific research and advanced development, approximately \$35 million in company funds were expended during the year on the development and application of new technical knowledge. More than 5,000 scientists and engineers throughout the General System were engaged in a wide range of projects with very promising potentials.

As a further indication of the organization's strength in science and engineering, research and development work totaling in excess of \$100 million was performed in 1963 for the government — bringing the total of our over-all technical effort to more than \$135 million.

New record in defense work

Involving many advanced aspects of communications and electronics, the defense work of the General System

reached a new record level of \$208 million in 1963. It is particularly important to note that this area of our operations includes a large variety of projects, providing a high degree of flexibility in meeting the changing requirements of military technology.

An especially significant contract awarded during the year calls for the production and installation of high-speed switching centers for a new world-wide military communications system. Other major projects include command and control equipment for Minuteman missile systems, communications systems for missile launching sites, and equipment for various aerospace programs.

In addition to the defense projects of the manufacturing group, the telephone companies further expanded the vitally important facilities they are providing for the armed services.

New and improved facilities

Representing a major factor in the General System's continued growth and development, substantial investments were made in new telephone and manufacturing facilities during the year, a record total of \$282 million being expended on improvement and expansion. This brought to more than \$1.3 billion the new investment over the past five years, and at year-end the total gross investment in plant and equipment was more than \$2.7 billion. By far the greater portion of last year's total represented new telephone facilities, reflecting the continued rapid growth of the market for communications services. Although the capital requirements for new manufacturing plants and equipment have, by their very nature, been considerably smaller, the additional investments made in 1963 maintained the high efficiency of these facilities.

Greater efficiencies, lower costs

To aid in assuring the best possible return on the capital already invested in the business, the constant challenge of finding better and less costly ways of doing things throughout the System received continued strong

attention during 1963. Greater efficiencies and lower costs were achieved in many aspects of our telephone and manufacturing operations, resulting in important contributions to the year's revenues, sales, and earnings.

Greater opportunities ahead

The past year again demonstrated that the communications industry not only is one of this country's fastest growing major industries but offers unprecedented potentials for future growth and development. The opportunities for expanding the industry's existing services and introducing entirely new concepts in the years ahead are virtually unlimited, as the communications requirements of individuals and organizations become increasingly broad and complex. In addition to the continued growth of local and long-distance voice communications, there will be steadily increasing opportunities for the expansion of data communications and other specialized services.

We are confident that the General System will take full advantage of these potentials, with determination, ingenuity, and skill.

Acknowledgment

The more than 97,000 men and women throughout the General System constitute by far our most valuable asset. Special mention should be made of the invaluable contributions which they made in 1963 to the continued progress of the over-all organization. They are to be strongly commended for their many accomplishments during the year.

In respectfully submitting this report, the Board of Directors wishes to extend its sincere appreciation to the Corporation's more than 400,000 shareowners for their continued interest and support.



DONALD C. POWER
Chairman of the Board

Progress in 1964

Record revenues and earnings

Combined revenues and sales from the telephone and manufacturing operations reached a new high of \$1,443,437,000 in 1963, exceeding by 9 per cent the previous record established in 1962.

Operating revenues of the telephone subsidiaries totaled \$645,136,000, representing an increase of 11 per cent over the record set a year earlier. Net sales of the manufacturing subsidiaries reached a new high of \$798,301,000, which exceeded the 1962 total by 7 per cent.

Consolidated net income set a new record of \$105,086,000, or 22 per cent ahead of the preceding year's total of \$86,269,000. Reaching a new high of \$73,772,000, net income available to the Corporation from telephone operations was 26 per cent greater than a year earlier, and net income from manufacturing operations totaled \$33,020,000, which represented an increase of 14 per cent over 1962.

Net income from telephone operations includes investment tax credits totaling \$3,317,000 applicable to 1963 and 1962 for telephone subsidiaries operating in states where the regulatory commissions having primary jurisdiction have prescribed the accounting method to be followed. In 1962, the total amount of the investment tax credit applicable to the telephone operating companies was deferred pending clarification of the accounting treatment to be required by the commissions, and therefore had no effect on consolidated net income for that year.

The investment tax credit, adopted by Congress in 1962 to stimulate business investment in new equipment, is based on the cost of equipment placed in service after December 31, 1961, and reduces Federal income tax payments for the applicable year.

Earnings per share equal \$1.38

After provision for the preferred dividends, consolidated net income was equal to \$1.38 per common share on

the 76,079,000 average number of shares outstanding during the year. In 1962, earnings were \$1.15 per share on 74,611,000 average shares outstanding, which represented 1,468,000 fewer shares than the 1963 average.

Defense business sets new record

A new all-time record of \$208 million was set in the General System's defense business in 1963, embracing a wide variety of highly advanced projects, primarily in the development and production of electronic systems and equipment. This total represented about 25 per cent of manufacturing sales, and it is anticipated that the percentage will remain at about that level in the foreseeable future.

At year-end, the backlog of defense orders was about \$200 million, including a number of particularly significant awards received in the latter part of the year.

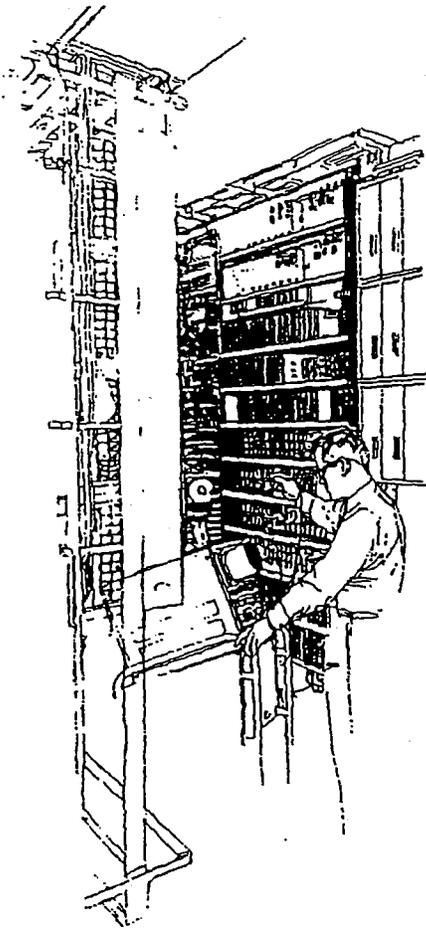
Increased dividends

The Corporation paid more than \$64 million to the shareowners in common and preferred dividends during the year. A total dividend of 84 cents per share was paid on the common shares, representing the 11th consecutive year the total common dividend paid has increased. Quarterly payments of 20 cents per share were paid on March 31 and June 30, and the dividends paid on September 30 and December 31 were at the increased rate of 22 cents per share. The total paid on the common shares during the year was \$63,637,000.

The regular quarterly dividends on the 4.25%, 4.36%, 4.40%, 4.75%, and 5.28% preferred shares were paid on the first of January, April, July, and October. The payments on the preferred totaled \$407,000.

Higher taxes paid

The total tax bill of the Corporation and the subsidiaries continued to increase in 1963, as the result of greater revenues and sales, higher net income, and additional expansion of facilities. Totalling more than \$197 million, the taxes paid represented about \$2.59 for each share of the Corporation's outstanding common stock.



The steadily rising expenditures of government at all levels are reflected in the fact that the taxes paid in 1963 represented almost twice the earnings per common share for the year.

Financing of new facilities

For additional investment in new and improved telephone and manufacturing facilities, more than \$133 million in new capital was raised last year by the Corporation and the subsidiaries, augmenting other funds available from depreciation, reinvested earnings, and other internal sources. Of this total, the Corporation raised \$50 million through the sale of debentures, and the subsidiaries obtained \$61 million through the sale of bonds and \$22 million from the sale of preferred stocks.

Shareowner total increased

Reaching a record total of more than 408,000 common shareowners at year-end, or four times the total of five years ago, the base of ownership in the Corporation continued to increase in 1963. More than 338,000 of this total were shareowners of record, ranking the Corporation fifth among all companies traded on the New York Stock Exchange. An estimated 70,000 additional common shareowners hold their stock through nominees, bringing the actual total to more than 408,000.

In addition to the common shareowners, there were about 1,500 holders of the five series of the Corporation's preferred stock at year-end, and more than 71,000 holders of stocks of the telephone subsidiaries.

Investor relations

During 1963, various activities were undertaken to keep the shareowners, investment banking firms, large institutional investors, and financial analyst groups fully informed on the continued growth and development of the General System. The Chairman of the Board and other members of top management met with many analyst and investor groups and individuals, providing requested background information.

Advertising

In 1963, the Corporation was continuously presented to the public through corporate and financial advertising mainly in print media. A new format for the financial advertising campaign was introduced to emphasize the diversified capabilities of the System, and a new magazine campaign was directed to college and university students.

During the year, the Marketing and Sales, Commercial, and Public Relations departments throughout the System's telephone operations worked in close coordination to promote various communications services. Advertising conferences were held with each telephone subsidiary to discuss the improvement of advertising methods and media.

Our manufacturing subsidiaries continued both trade and consumer advertising to call attention to their products, services, and capabilities.

Public relations

Creating a broader awareness of the General System's accomplishments and objectives, thereby enhancing the over-all "business climate" in which the System operates and strengthening its ability to serve the public, a variety of communications programs were undertaken during the year.

The dissemination of news and background information to all classes of media was strengthened. Presentations before community groups and schools were increased, reporting new trends in the communications and electronics industries. Numerous "Open House" programs were held during the year.

Through meetings, employee newspapers, newsletters, and special materials, internal communications programs reviewed company plans and policies, stressing the necessity for increased efficiencies and lower costs to enable the System to serve its customers more effectively. In addition, various economic and political trends affecting the System's operations were reported to the employees. A number of System companies con-

ducted educational programs for employees, covering basic economic principles and governmental trends on a non-partisan basis, and urging all employees to be fully informed on major issues affecting them not only as employees but as private citizens.

Employee relations

General System employment reached a new high of more than 97,000 at year-end, approximately 5,000 greater than the year earlier. Employees of the manufacturing, sales, and research companies totaled 50,000, and employment of the telephone companies was 47,000.

Total wages, salaries, and benefits set a new record of \$531 million, or about 37 per cent of revenues and sales.

Substantially all General System employees are covered by pension plans, group life insurance, and sickness and accident plans.

Contract negotiations were satisfactorily concluded with more than 30 bargaining units in various System companies. General Telephone Company of Florida experienced a 61-day strike by employees represented by the International Brotherhood of Electrical Workers before agreement was reached on various economic issues and basic management rights. In Northlake, Illinois, production employees of Automatic Electric Company represented by the IBEW were on strike four weeks in November and early December, the union citing an incentive system clause, which has been in previous contracts for 28 years, as the reason for the strike. The strike was terminated by a back-to-work agreement which specified that the negotiations to settle the dispute would be continued.

An extended strike against General Telephone Company of California by employees represented by the Communications Workers of America began in mid-October and continued into 1964. The main issue in dispute involved the union's insistence that the settlement follow the union's proposal for a nationwide bargaining

pattern without regard to the local situation. The company refused to settle on this basis.

Employees' stock plan

More than 20,000 employees participated in the second offering under the Employees' Stock Plan, purchasing about 700,000 shares of the Corporation's common stock. Payments began in August, 1962, and the Plan terminated in January, 1964. The Plan was approved by the shareowners in 1960 to provide an additional incentive to employees and further opportunity to share in the System's progress.

Training and development

To meet the expanding personnel needs of the over-all System, strong emphasis continued to be placed during the year on employee training and management development programs. These programs have the objective not only of improving job performance and filling vacancies with qualified personnel, but also to assure that adequate preparation is made for projected future needs.

LaCroix Awards

In recognition of meritorious achievements involving life-saving and first aid, 13 employees last year received Morris Felton LaCroix Awards named after the late founder of the General System. Dr. Lee L. Davenport, President of General Telephone & Electronics Laboratories Incorporated, received a Silver Medal Award for his role in saving the lives of two associates who were seriously injured in an airplane crash.

Certificates of Merit were awarded to: L. Wootson Goff, General Telephone Company of the Southeast; Mary Ellen Farley and Audrey Kummert, General Telephone Company of Nebraska; Florine Douglas, Jane Bazzell, Emma Dalton, Charles VanBibber, George Oliver, and Eugene Galeener, General Telephone Company of Illinois; Geneva Corwin and John Crofoot, General Telephone Company of Upstate New York, Inc.; and Fred B. Glover, General Telephone Company of the Northwest.



Telephone operations

Serving at year-end nearly 5,000,000 telephones in 6,000 communities of 13,000,000 population in 32 states, the Corporation's more than 30 domestic telephone operating subsidiaries comprise the nation's largest Independent telephone system. Three international subsidiaries in British Columbia, the Dominican Republic, and Haiti served more than 635,000 telephones at the end of 1963. The year-end total of about 5,635,000 domestic and international telephones represented an increase of about 330,000 or more than 6 per cent over 1962 and an increase of about 2,000,000 in the past five years.

Continued growing demand for new and broader services resulted in the net gain of about 281,000 telephones during 1963, and the acquisition of several properties brought an additional 51,000 stations into the System. In addition to the above operations, an affiliate serves 110,000 telephones in the Philippines.

Expansion of facilities and service

Continued strong attention was given during the year to the expansion and improvement of telephone service, a record total of more than \$262 million being invested by the operating companies in new facilities. This new investment brought the total expended over the past five years to more than \$1.2 billion.

Additional exchanges were converted to fully-automatic operation, with the result that more than 98 per cent of the General System's telephones were dial-operated at year-end, in contrast to 88 per cent five years ago. Direct Distance Dialing was extended to a number of localities throughout the country, increasing to approximately 50 per cent the number of System exchanges now having this rapid and convenient long-distance service.

The total gross investment in telephone facilities at year-end was more than \$2.4 billion, which was equivalent to \$432 per telephone, compared with \$420 a year earlier. However, the

continually rising cost of new facilities for expanding and improving telephone service is not adequately reflected in the average plant investment per telephone, since each new telephone added during the year represented a considerably larger average investment.

Carrying forward the expansion and improvement of service, the telephone companies plan to invest more than \$291 million in new facilities during 1964.

Growth in business communications

The steady growth and strong potential of the business communications market are reflected in the many convenient and versatile services offered by the General System's operating companies. To assure maximum effectiveness in the marketing of business communications services, custom "Marketing Plans" are developed for services, functions, and systems. These stress the availability of modern and efficient communications systems to meet a variety of requirements. The business communications marketing program is symbolized by the "communications consultants" throughout the System who work closely with their customers on a frequent and continuing basis in recommending services tailored to meet specific needs.

Wide variety of services

These services include Automatic Electric's type 300 PABX (Private Automatic Branch Exchange), designed for commercial organizations requiring more than 100 telephones; many types of equipment for the transmitting and receiving of business data over telephone lines; the Call Commander® telephone which features highly flexible outside line and "intercom" service and provides more than three times the number of circuits offered by standard key telephones; a variety of hotel-motel services providing far greater convenience and versatility; Electronic Secretary® telephone answering and recording sets; loud-speaking telephones providing unusually high-

quality voice reproduction; mobile telephones, and other services.

Educational services

Operating companies in various parts of the country are also providing facilities for educational television systems which permit the utilization of more effective instructional techniques and broader subject matter than would otherwise be possible. In addition, closed-circuit television systems are finding increased use for educational purposes as well as commercial applications.

Assuring more adequate earnings

To combat the rising costs of doing business, and also bring further improvements in service, strong emphasis continued to be given to the more effective utilization of existing facilities through the adoption of more efficient work practices and procedures. These activities produced many substantial benefits to the telephone companies and their customers during the year. However, it became necessary in several areas to apply to regulatory commissions for a repricing of services, to improve the return on capital invested in the business. Increased rates producing additional annual revenues of approximately \$2,000,000 were obtained.

The operating companies also continued to devote vigorous attention to negotiations with various connecting companies, resulting in more equitable compensation for the use of General System facilities in jointly rendered long-distance service.

Directory operations

General Telephone Directory Company, which sells Yellow Pages advertising and publishes more than 750 different telephone directories for the General System and other Independent companies, set new sales and earnings records in 1963. The System's telephone companies also benefited substantially from these records, in the form of additional earnings resulting from their increased share of the revenues from directory operations.

Manufacturing

The highly diversified manufacturing operations of the General System recorded further major gains in 1963. Comprising one of the foremost industrial groups in the world, the domestic and international subsidiaries produce a wide range of systems, equipment, and devices for the expanding markets in communications, electronics, and related fields.

In the United States, these operations include 46 plants in 13 states, ranking among the most modern and efficient manufacturing facilities in industry. Market areas throughout the country are covered by a network of distribution centers, sales offices, distributors, and dealers located in principal cities. Manufacturing operations of the international subsidiaries include 13 plants in Canada, Europe, and Latin America. Associated companies are located in Great Britain, Italy, Mexico, and Japan. World-wide product distribution is provided by sales offices strategically located in principal market regions.

AUTOMATIC ELECTRIC

Founded in 1891 to manufacture the world's first automatic telephone system, Automatic Electric Company has since pioneered in many major aspects of telephony, ranging from new types of telephone instruments to automatic exchanges and related equipment.

A majority of all the automatic telephones in the world operate on principles originated and developed by Automatic Electric, the largest producer of communications equipment for the independent telephone industry. The company is also a leader in the design and manufacture of recording and answering equipment, industrial control components for use in industrial products and in the control of industrial processes, and complete communications and control systems for business and industry.

Recent AE developments include E-A-X, the first electronic telephone switching system compatible with the

type of electro-mechanical equipment now serving more than half of the nation's telephones; a broad-band switching system which revolutionizes high-speed data transmission via a common carrier, and a Touch-Calling telephone utilizing pushbuttons instead of the traditional dial.

World-wide communications system

Automatic Electric's leadership in advanced communications techniques was reflected in receipt of a government contract for equipment to be used in a new world-wide defense communications system. The contract, being administered by the U. S. Air Force for the Defense Communications Agency (DCA), calls for the production and installation of high-speed switching centers to interconnect a global network, initially through 23 installations in 15 countries. At the outset, the system will handle voice communications, with the capability for broad-band switching to accommodate high-speed data transmission.

Electronic switching system

As described in the Research and Development section of this report, Automatic Electric has started field tests of the E-A-X electronic automatic exchange. This new system represents a highly advanced application of electronics to the telephone industry. It is expected to bring new economies and greater flexibility to telephone companies, as well as unique services to the customer.

New equipment marketed

For the rapidly growing business market, a new PABX (Private Automatic Branch Exchange) system provides a complete package of services, including direct-inward-dialing from an outside telephone to any inside telephone; hold, transfer, consultation, and conference operations under the control of any internal telephone user, and other features.

The company has marketed the Series 100 Director, which combines electro-mechanical and electronic techniques to provide common control for step-by-step telephone offices.

This equipment simplifies trunking problems of telephone offices, particularly in providing EAS (Extended Area Service) to their customers.

Filling a need for modern communications in the numerous smaller motels with up to 25 telephones, the Leich Type 25m PABX was introduced. Another development was the Electronic Secretary® Model MR-2 monitor-recorder, which provides a permanent record of telephone conversations, sales reports, or orders.

Industrial products

Supervisory control and telemetering systems were placed in service in 1963 for three major pipelines. A fourth will go in service early in 1964. These systems use solid-state electronics and specialized computers to monitor and control the flow of petroleum products and natural gas through hundreds of miles of pipeline networks. Work has started on similar systems for two electric power utilities and a process control system for an abrasive manufacturer.

Warehouse expansion

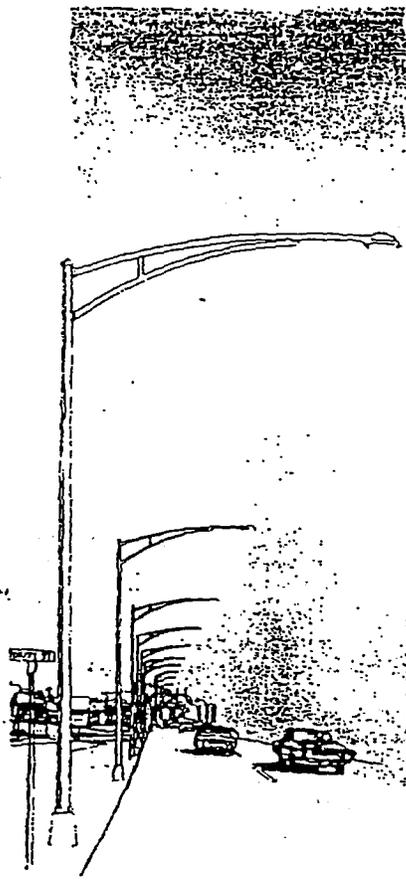
Modern warehouses in Dallas, Tex., and Beaverton, Ore., were placed in operation during the year to provide expanded facilities for the distribution of Automatic Electric products and supplies. Plans are also underway for new warehouses in Tampa, Fla., and Kansas City, Mo.

LENKURT

Lenkurt's accelerated research and development program led to a number of new products in 1963, thus enabling the company to enhance its position as a leading producer of microwave radio, multiplexing, and data transmission systems.

New systems developed

In the microwave field, four new versions of the basic 76 Microtel® transmission system, introduced to the telephone industry in 1962, were developed. The new versions transmit television programs and handle the different ranges of radio frequencies assigned to various governmental and industrial users, such as electric util-



ities, pipelines, and railroads. The TV version provides long-distance links for educational TV networks.

Indicative of Lenkurt's ability to meet special needs is the contract calling for a 660-mile microwave communications system for the Bonneville Power Administration between Portland, Ore., and Spokane, Wash.

In addition to continuing as the principal supplier of transmission equipment to the Independent telephone industry, Lenkurt also received several important communications systems contracts from railroads.

Development of the new solid-state 46A multiplexing system, now capable of handling up to 600 telephone conversations simultaneously, was completed. The system has had an excellent reception in commercial and military markets.

Gains in data transmission

Lenkurt also made important gains in the data transmission field, as described in the Research and Development section of this report.

SYLVANIA

Record sales volume and greatly improved earnings were achieved by Sylvania in 1963, as the result of intensified new product development, expansion of market coverage, and continued strong emphasis on attaining improved operating efficiencies.

The company's total employment reached an all-time high of more than 31,000 in 1963. Facilities were expanded in three states, and a new fluorescent lamp plant in Versailles, Ky., and a special lighting products plant in Exeter, N. H., will begin production in 1964. New distribution centers were opened in Charlotte, N. C., and Seattle, Wash. A third distribution facility will be opened in 1964 in New Orleans, La.

Lighting

Sylvania's position as a leading producer of lighting products was further enhanced during the year. New and improved products, plus intensified marketing programs, again resulted in record lighting sales. Improve-

ments were made in the company's basic fluorescent, incandescent, and mercury vapor lamps.

Continuing its No. 1 position in photographic lighting, Sylvania introduced its Sun Gun® Cordless movie light—a self-contained, rechargeable unit weighing less than four pounds. In the projection lamp field, the company developed a unique lamp which begins to dim when it nears the end of its useful life, thus permitting more efficient lamp replacement programs.

New industrial lighting products included a small glass-enclosed light switch, magnetically activated without mechanical connections, for use in appliance and automotive applications; a fluorescent lamp which burns brighter at high temperatures by using a new principle of controlling mercury atoms within the unit; a universal iodine quartz lamp for either rough or conventional service, and a compact, low-cost, visual approach lighting system for small airports which offers safety factors normally available only at major air terminals.

Electronic systems

A number of significant defense and aerospace contracts were awarded to Sylvania during the year, including new projects as well as additional funding on existing contracts. A ground electronic system now under development will provide command and control functions for the improved Minuteman weapons system. Other contracts cover the production of equipment for a Minuteman test site and the installation of a communications system to interconnect 165 missile sites.

Among the year's developments were a parachutist-carried radio pack which permits anti-guerrilla fighters to maintain a one-man forward command post, and a small wideband Laser modulator theoretically capable of handling 100,000 telephone conversations simultaneously.

Sylvania has a number of important space projects under development in such areas as radar and communica-

tions systems. The communications "black-out" problem that occurs when space vehicles re-enter the earth's atmosphere is being studied, and a battery-operated, portable millimeter radio system was developed for space communications.

In its own research programs, Sylvania developed a high-speed electronic sorting system which identifies and records railroad cars traveling at speeds up to 60 miles per hour. In addition, a ruggedized, magnetic tape-handling system was designed, capable of withstanding violent shock and wide temperature extremes.

Home and commercial electronics

Continued improvement and expansion of marketing programs and complete re-styling and re-designing of Sylvania's home electronic products resulted in substantially improved sales in 1963. The public response to the 700-4 stereophonic high-fidelity phonograph models, particularly in console versions, has been excellent. The company further expanded its direct factory-to-dealer coverage with resultant improvement in sales in several particularly competitive market areas.

Several new developments in the consumer electronics field, which include hospital and educational direct-view television, were announced. Response to the unique 2-in-1 high-resolution TV camera has been exceptional and it received an industry award as one of the 100 most significant new products of 1963.

Electronic components

Sylvania resumed the production of color TV picture tubes in 1963 and expects to increase its output substantially in 1964. Improved black and white TV picture tube sales were achieved, and the marketing organization was realigned to place increased emphasis not only on expanding existing markets but the development of markets for new products.

In the semiconductor field, Sylvania has expanded its research and development, and has started produc-

tion of advanced forms of integrated circuitry. A new wire-bonding technique which increases the reliability of transistors was developed.

Materials and parts

A revolutionary tungsten-mesh heating element for high-temperature vacuum furnaces, providing a useful life nearly three times that of conventional sheet-type elements, was developed. The company substantially increased its capacity to produce refractory metals for aerospace applications by installing the world's largest metal powder press, operating at 75,000 pounds per square inch.

Developed by GT&E Laboratories, a metallurgical-ceramic coating process which protects the structural and operating parts of jet aircraft and space vehicles from high-temperature erosion and corrosion was placed in production.

INTERNATIONAL OPERATIONS

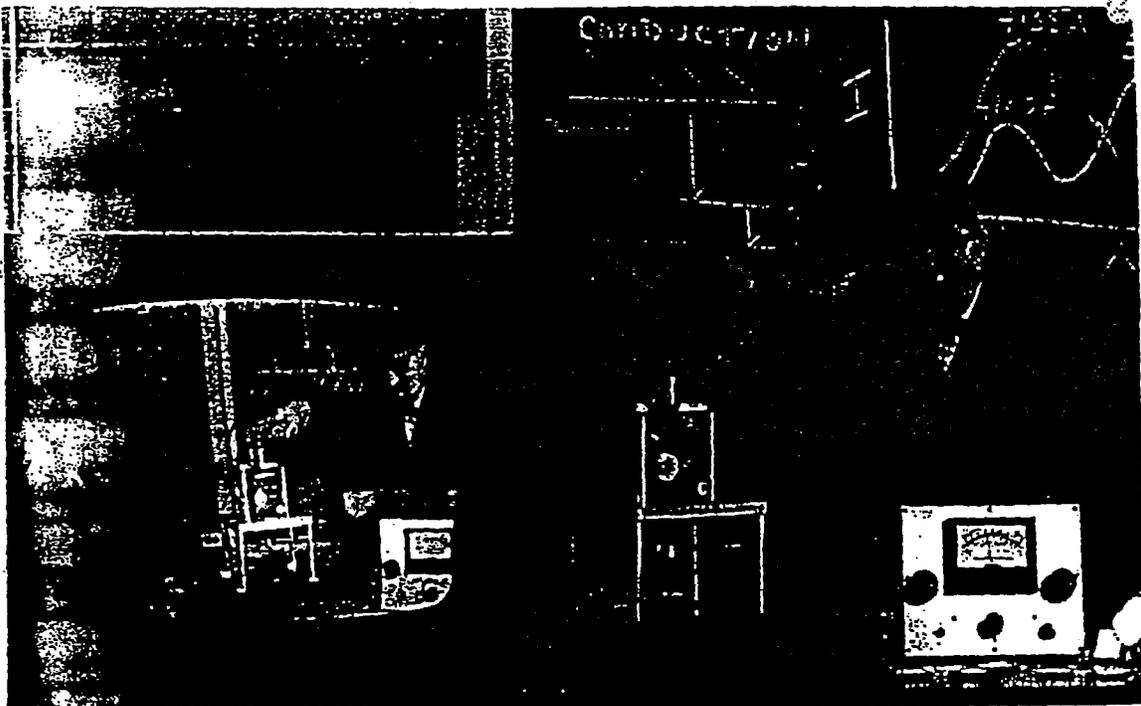
Participating in the continued growth and development of major market areas abroad, the international companies achieved combined sales approaching \$100 million in 1963, representing a large variety of systems, equipment, and devices manufactured by subsidiaries in Canada, Europe, and Latin America, as well as the marketing overseas of products made by the domestic companies.

For the communications, electronics, and electrical markets, the international facilities produce telephone instruments, many types of communications equipment, electronic components, electrical instruments, television and radio sets, and lighting products. World-wide market coverage for this diversified product line is obtained through sales offices, distributors, and agents in nearly 80 countries and territories.

As the growth and development of the emerging nations of the world is accelerated and as the economies of the developed countries continue to expand, many new opportunities will arise in the international manufacturing and marketing operations of the General System.

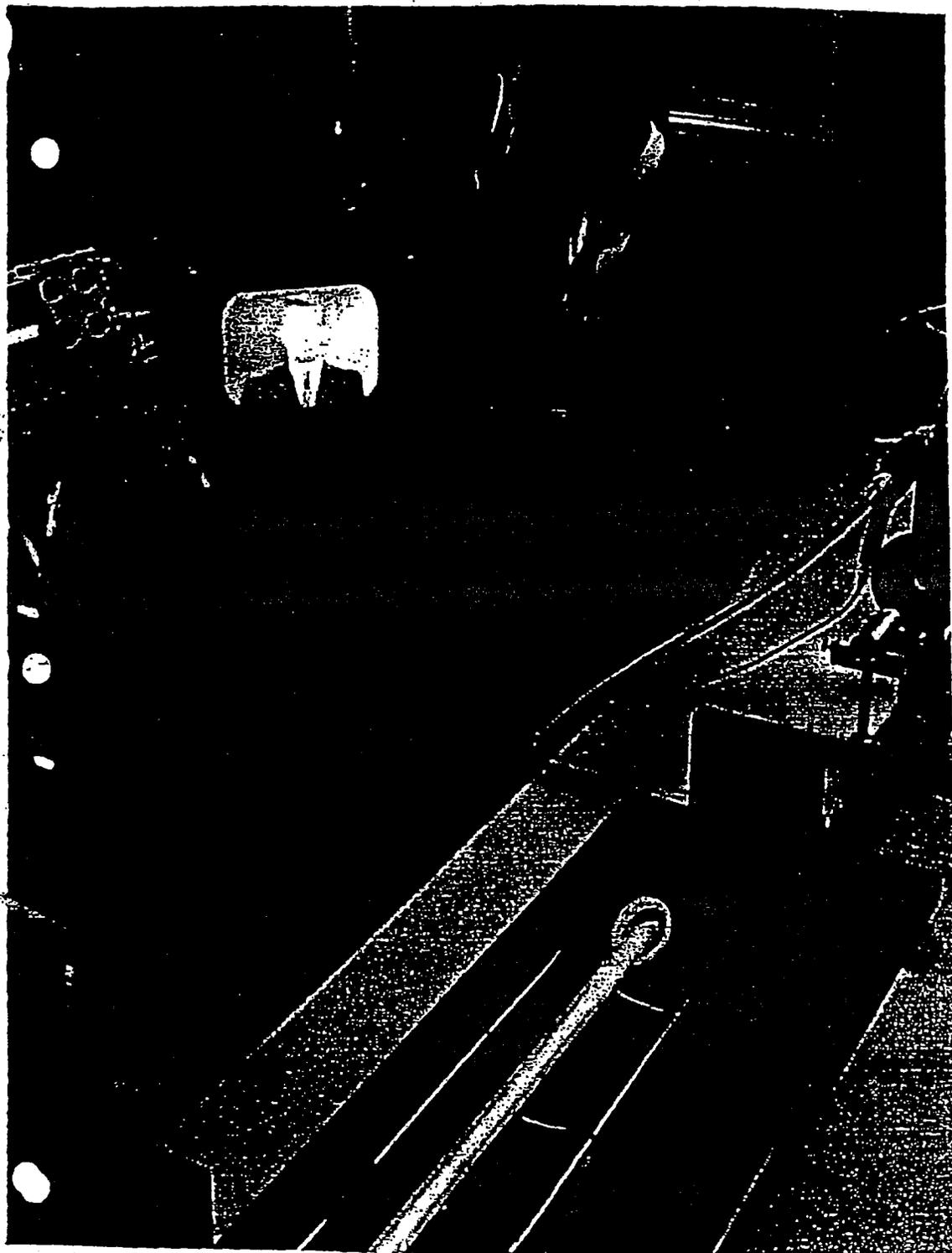


*H*ands-free telephone conversations are permitted using Automatic Electric's Executive Speakerphone.



*I*llyvania Electronic Viewfinder camera with built-in monitor permits precise control of the picture that will be transmitted

GTE 0000405

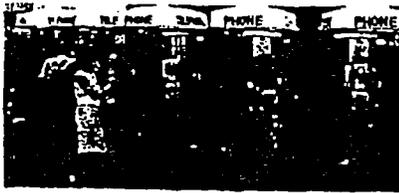


General System scientists used a highly intense beam of light generated by a Laser device to transmit and receive television pictures.

GTE 0000406

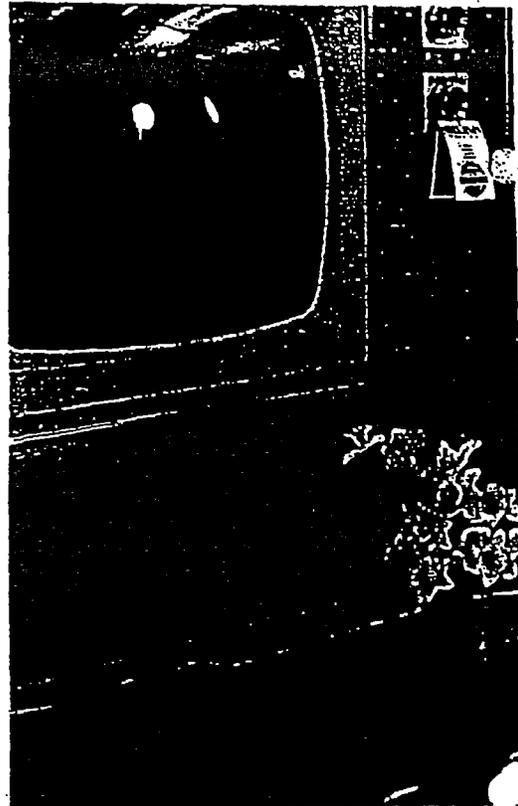


*C*onsultants in each telephone company are available to advise business customers on services that can solve their communications problems.

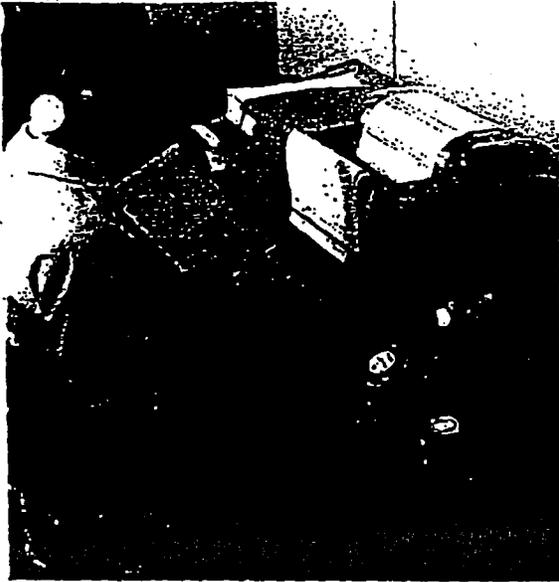


*T*he System's telephone companies are adding sidewalk telephones at convenient locations.

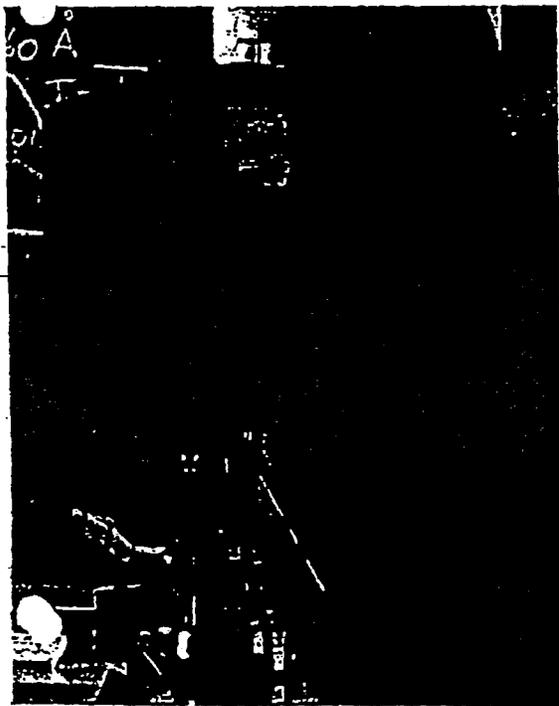
*S*ylvania's 1964 home electronics line offers a variety



GTE 00000407



The latest equipment for the fast, reliable transmission of business data is available through the System's telephone companies.



to remote classroom monitors in educational television systems.

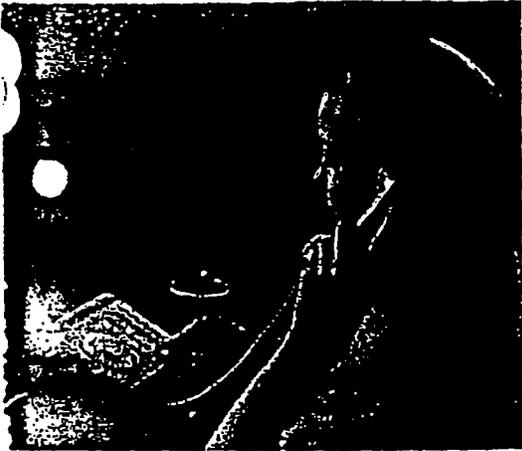


The 37-pound radio pack developed for Air Force anti-guerilla units by Sylvania engineers replaces equipment that weighed approximately 300 pounds.



An Air Force officer is shown at a control console in this full-scale Sylvania mock-up of an underground launch control facility for the Air Force's Minuteman Missile. Sylvania is providing the ground electronics system for this defense project

GTE 0000409

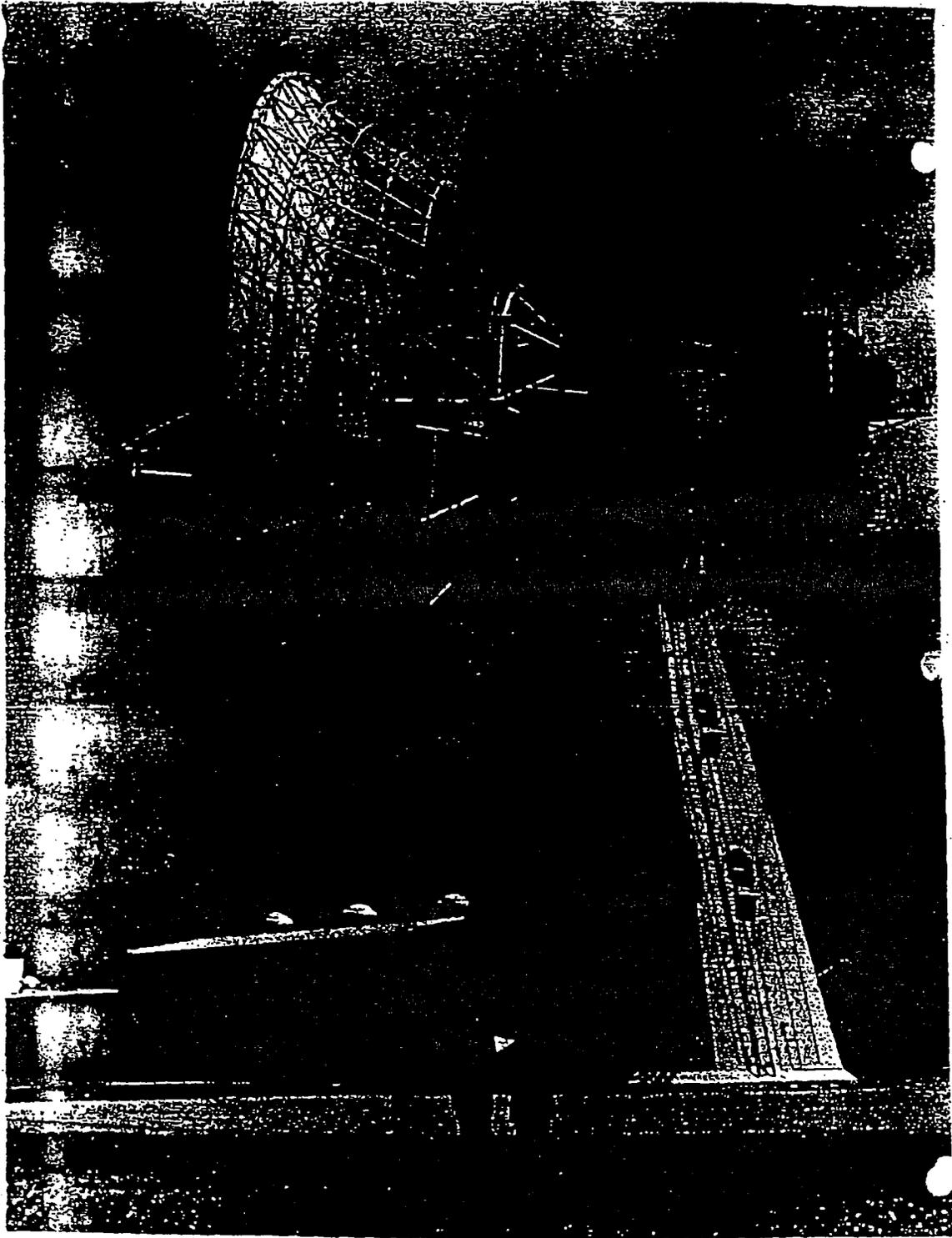


The Commander® telephone meets many business needs.
It allows multiple telephones to be controlled from one location.

modern furniture styles including stereo combinations and color TV sets.

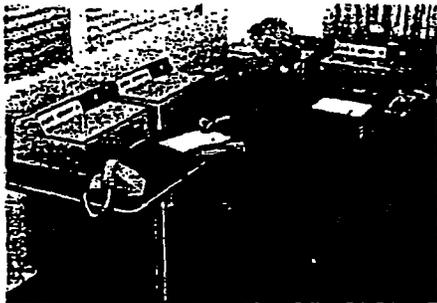


GTE 0000410



The reliable tracking antenna developed by Sylvania is tracking the Syncom II communications satellite launched during 1963.

GTE 0000411

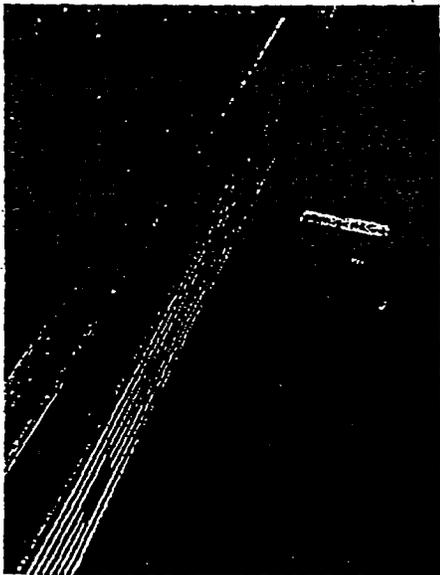


*N*ight orders received on Electronic Secretary® telephone answering sets can be transcribed the next day.



*S*ylvania's high-speed print reader can convert more than 700 characters per second into computer language from printed or typewritten pages.

*S*ylvania's automatic railroad identification system records numbers on cars passing at sixty miles per hour.



*T*here is a growing demand for mobile telephone service in many business vehicles.

Research and development

Reflecting the combined efforts of more than 5,000 scientists and engineers, the research and development programs undertaken by the General System during 1963 involved the continued expansion of established fields of activity, as well as the exploration of new and advanced technologies offering particular promise for additional revenues, sales, and earnings. These activities represented the expenditure last year of more than \$35 million in company funds, or about 6 per cent of non-military sales, illustrating the great importance placed upon assuring the future growth and development of the over-all System. An additional \$100 million in research and development projects for the Armed Services and government agencies brought the total for the System-wide scientific and technical effort to more than \$135 million.

Electronic telephone exchange

A field-test installation of the E-A-X electronic telephone exchange, designed to provide high-speed control of telephone switching operations and a variety of services not previously available to telephone users, was completed by Automatic Electric Company early in 1964 in the Portage, Indiana, exchange of General Telephone Company of Indiana.

An extremely important feature of E-A-X is its compatibility with widely-used existing facilities, thus meeting the steadily growing need for new equipment which will provide broader and more versatile communications services and yet permit orderly expansion at the lowest possible cost. The new electronic exchange, which adapts electronic computer techniques to telephone switching and promises efficiencies and economies not heretofore attainable, is the first of its kind to offer intimate compatibility with the "step-by-step" electro-mechanical switching equipment which now serves approximately 50 per cent of the telephones in the United States and many

telephone systems abroad.

The pilot model of E-A-X is undergoing rigorous evaluation tests at Portage before being connected into the community's existing 2,400-line telephone system in mid-1964 for thorough tests of its capabilities under actual operating conditions. The test installation will place a 600-line E-A-X system side-by-side with existing "step-by-step" electro-mechanical equipment in the central office, thus permitting the telephone customer to be transferred readily from one system to the other.

Pushbutton telephone

Development of a pushbutton telephone that enables the user to select a telephone number twice as fast as with the traditional rotary dial was announced in November, 1963, by Automatic Electric. Utilizing 10 buttons in place of a dial, the new telephone will be field tested this year at Wadsworth, Ohio. When making a telephone call, the appropriate buttons on the new units are pressed in sequence — a procedure that is simpler and faster than rotating a dial fingerwheel.

The pushbutton instrument can be utilized in business communications applications, such as in transmitting numerical data directly to a data receiver. It can also be used in private automatic telephone systems and other applications where the method of sending data employs frequencies or contact closures generated by pushing a button. Provisions have been made for two additional buttons that can be used for special functions, such as the "start" and "end" for data transmission and intercom signalling.

Color television

Research programs in color television, including investigation of new phosphors to improve the clarity and brightness of the television picture, were expanded substantially by Sylvania. To meet the anticipated increases in demand, intensive studies also are being conducted into various size and form factors of picture tubes.

Laser research broadened

In the promising field of Laser — Light Amplification by Stimulated Emission of Radiation — which is believed to have a strong potential for communications and electronics, a number of important advances were realized. Producing an extremely narrow and concentrated beam of coherent light which can be focused and directed over long distances, Laser devices and associated equipment are theoretically capable of transmitting simultaneously extremely large volumes of long-distance telephone calls, business data, and television programs. The new devices have other important potential uses in the fields of medicine, biology, metalworking, radar, satellite tracking, and other applications.

As a result of research into electro-optic materials and their use, GT&E Laboratories' scientists developed during the year a method of deflecting or "steering" the Laser beam electrically. — a technique of importance in the detection and location of satellites with Laser systems, as well as in establishing communications between them.

Liquid Laser developed

A new type of Laser also was developed, using an organic liquid as a "host" medium rather than crystals or gas as used in previous types. Experimentation with the liquid Laser is providing additional valuable information concerning the generation of higher intensity light beams.

Continuing work in the field of gas Lasers has resulted in the design and fabrication of smaller and more economical devices providing more effective control of light output, which has opened up new application possibilities in the area of high-precision electronic measurement. Similarly, a program to reduce the size of a previously developed Laser modulator is expected to broaden the potential applications in the communications field.

In another aspect of the year's research on new communications tech-

niques, GT&E scientists carried forward their work on devices utilizing millimeter waves, which occupy a "middle-road" on the frequency spectrum between Laser light beams and the microwaves used as the transmission medium for telephone calls, messages, and TV-radio programs. Because a millimeter-wave channel theoretically offers far greater capacity than a microwave channel and would not be influenced by adverse weather conditions to the same degree as a Laser beam, this technique provides another promising means for expanding the radio-frequency space available for communications.

Data transmission

Contributing to the steady growth of business data transmission over telephone facilities, Lenkurt Electric developed a new technique which will make possible the transmission of information over telephone lines and by radio at speeds up to 3,200 words per minute, or 2,400 bits per second. Such speeds can be achieved with highly reliable data transmission systems of reduced size and with half the complexity of those presently in use.

Called "duobinary" coding, the new technique combines the simplicity of conventional data transmission equipment with speed and accuracy that is equal to or greater than that of highly advanced systems which employ extremely complex electronic circuitry. Lenkurt utilized the coding technique in the development of its new 27A Duobinary-Datatel system, which makes possible high-frequency transmission of high-quality voice communications in the form of digits when used with "speech scrambling" equipment. The system transmits digital signals at twice the traditional digital transmission rate used in high-frequency radio, thereby substantially improving the quality of voice transmission.

Government agencies are expected to use the 27A system to transmit voice messages to ships or land stations throughout the world. Because of its high rate of speed, the system

is expected to find additional applications in the transmission of business information from card-to-card or tape-to-tape machines between the United States and locations abroad, and of near instantaneous digital tracking data such as that generated by the man-in-space and deep-space-probe instrumentation facilities of the U.S.

Space communications

General System scientists were engaged in various space communications activities during the year. They participated in the determination of the engineering design and operational test procedures for the initial control center of a projected worldwide military satellite communications system. In addition, a 60-foot antenna developed and installed by Sylvania at Camp Roberts, California, was utilized in a history-making satellite communications test in August, 1963, which linked the west coast of Africa with Camp Roberts, a distance of 7,700 miles, via a Syncom satellite. This was the greatest surface distance yet spanned between two points on earth by means of a communications satellite.

In the area of research into communications equipment for use within satellites, a solid-state transmitting-receiving system was developed which is capable of handling the same amount of information as the Telstar or Relay satellites although requiring substantially less power. The new system automatically directs its radio signals to any earth station which requests information from the communications satellite in outer space.

Many additional projects

The foregoing describes only a cross-section of the many research and development projects undertaken during the year throughout the General System. Additional programs concerned numerous other aspects of communications and electronics, helping to foster the System's continued progress through further advances in our scientific and technical capabilities.



GTE 00000415

Revenue and Net Sales

Revenue and net sales were \$1.4 billion in 1963, an increase of 16 million dollars, or 1% higher than 1962. Net sales from telephone operations were \$1.045 billion, an increase of 14% over 1962. Manufacturing net sales were 7% higher than 1962.

Consolidated Net Income

Consolidated net income rose 22% or \$10.8 million in 1963 to a record \$105.1 million. Combined net income from telephone operations amounted to \$74 million, an increase of 26% over 1962 and 48% over 1961. Manufacturing net income was up 14% over 1962 and 32% over 1961.

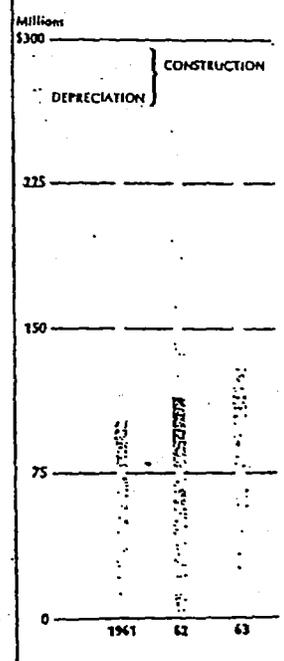
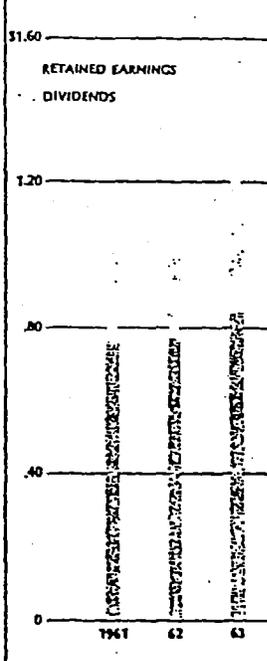
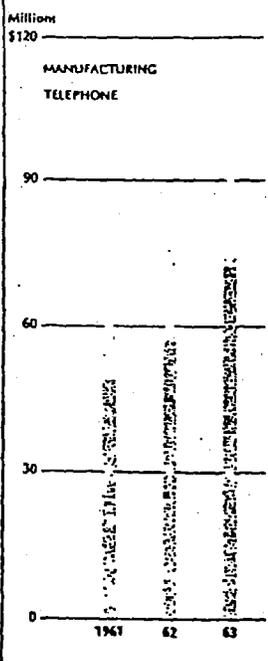
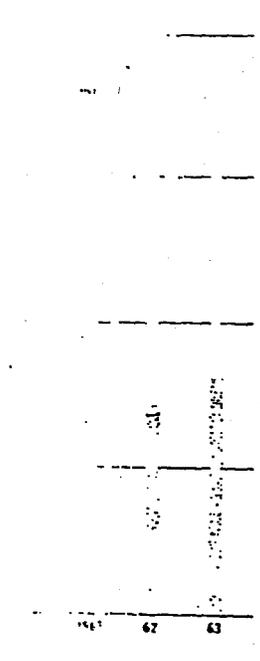
Earnings Per Share

Earnings for 1963 were a record \$1.38 per share on 76.1 million average number of common shares outstanding as compared with \$1.15 earned in 1962 on 1.5 million fewer shares. Dividends paid in 1963 on the common stock increased 9% over 1962, the eleventh consecutive year of increased dividend payments.

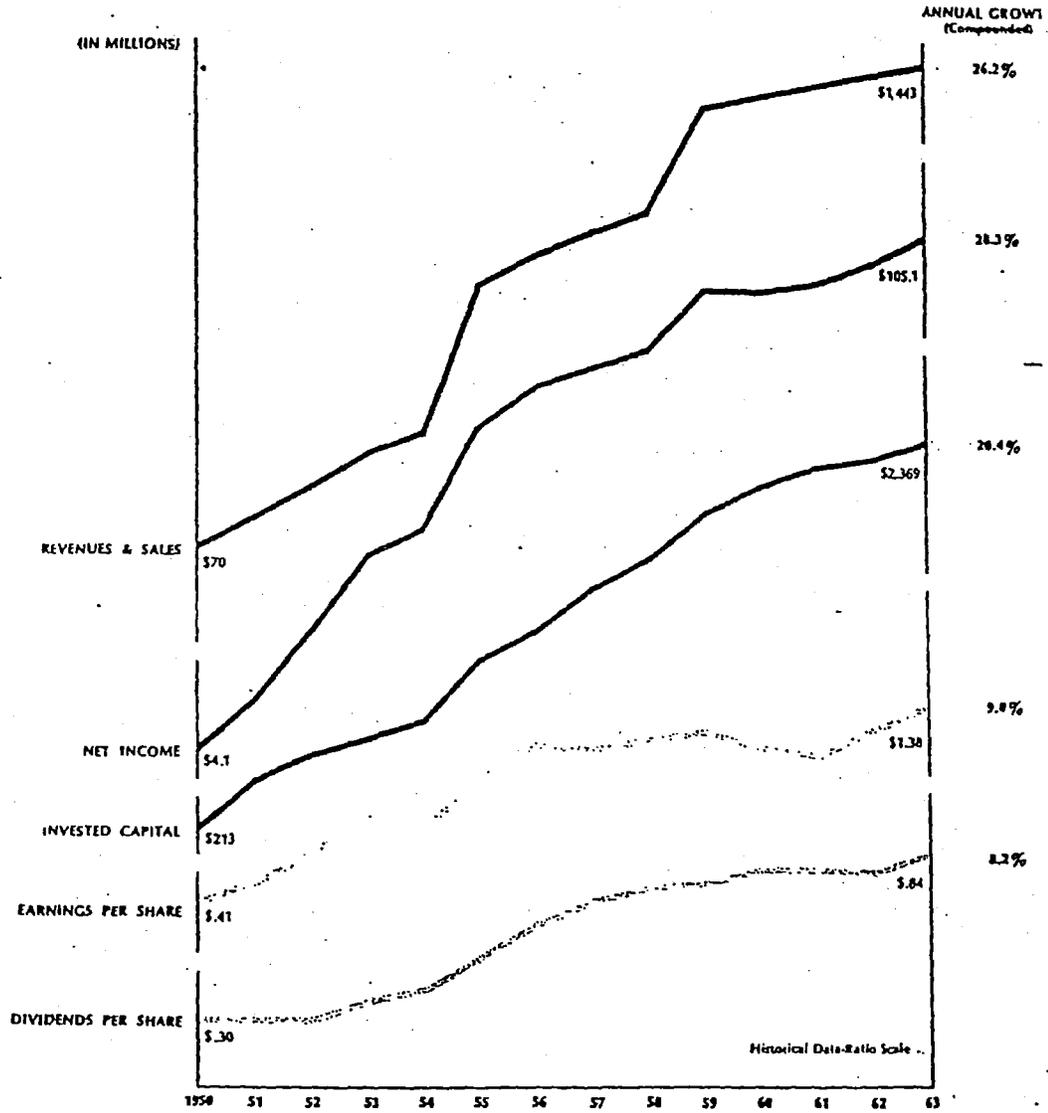
Gross Construction and Depreciation

In 1963, the System's expenditures on new facilities reached a record high of \$282 million. Telephone construction programs totalled \$262 million, and manufacturing expenditures were \$20 million.

Depreciation has become an increasingly important source of funds, providing \$129 million or 46% of 1963 construction outlay, compared with 40% in 1961.



GT&E Growth Pattern Since 1950



The dramatic increase in revenues, sales, and net income since 1950 reflects the internal growth of the System as well as acquisitions. On the average revenues, sales, and net income have doubled about every 3 years during this 13-year period. To support this growth, substantial amounts of additional capital have been required, and total invested capital has doubled about every 4 years.

Earnings per share of \$.41 in 1950 (adjusted for subsequent splits and

stock dividends) increased to \$1.38 in 1963, an average growth rate of 9.8% compounded annually. The profit growth-rate of all U.S. corporations during this period was 1.3% annually. Dividends paid to GT&E common shareholders increased at an annual rate of 8.2% rising from \$.30 in 1950 to \$.84 in 1963.

Use of a ratio scale in the above chart presents an accurate picture of relative rates of growth.

General Telephone & Electronics Corporation and Subsidiaries

Consolidated Balance Sheet

December 31, 1963 and 1962

ASSETS	December 31,	
	1963	1962
	(Thousands of Dollars)	
PROPERTY, PLANT, AND EQUIPMENT		
Telephone—substantially at original cost	\$2,436,791	\$2,226,214
Accumulated depreciation	(431,265)	(374,948)
Manufacturing—at cost (Note 2)	286,502	271,199
Accumulated depreciation	(129,150)	(113,774)
Property, plant, and equipment—net	<u>\$2,162,878</u>	<u>\$2,008,691</u>
INVESTMENTS AND OTHER ASSETS		
At cost or less—		
Investments in subsidiaries not consolidated		
Telephone companies	\$ 9,314	\$ 6,979
Manufacturing companies	613	400
Investments in other companies	35,974	26,501
Notes receivable (noncurrent)	23,569	20,863
Other	3,054	3,615
Total investments and other assets	<u>\$ 72,524</u>	<u>\$ 58,358</u>
CURRENT ASSETS		
Cash	\$ 54,165	\$ 49,732
United States and other government securities	13,528	18,891
Receivables, less allowances	199,093	205,362
Inventories, principally at lower of cost or market ...	216,896	195,916
Prepayments and other	11,562	9,875
Total current assets	<u>\$ 495,244</u>	<u>\$ 479,776</u>
DEFERRED CHARGES	\$ 15,887	\$ 16,768
Total assets	<u>\$2,746,533</u>	<u>\$2,563,593</u>

(The accompanying notes are an integral part of the financial statements.)

	December 31,	
	1963	1962
	(Thousands of Dollars)	
SHAREOWNERS' INTEREST		
GENERAL TELEPHONE & ELECTRONICS CORPORATION		
Common stock (Note 5)		
Common stock at par value	\$ 254,120	\$ 250,453
Common stock installments	12,136	3,388
Amount paid in, in excess of par value	349,607	342,095
Earnings retained for use in the business	319,820	281,901
Capital stock discount, premium, and expense—net	(2,352)	(4,078)
Total common stock	<u>\$ 933,331</u>	<u>\$ 873,759</u>
Preferred stocks (Note 6)	8,593	9,233
GT&E shareowners' interest	<u>\$ 941,924</u>	<u>\$ 882,992</u>
OUTSIDE SHAREOWNERS' INTEREST IN SUBSIDIARIES		
Minority interest in common stock and retained earnings	\$ 68,053	\$ 66,182
Preferred stocks	262,952	241,949
Total outside shareowners' interest	<u>\$ 331,005</u>	<u>\$ 308,131</u>
LIABILITIES		
LONG-TERM DEBT (Note 7)	<u>\$1,095,951</u>	<u>\$ 988,885</u>
CURRENT LIABILITIES		
Notes payable	\$ 70,434	\$ 102,561
Current maturities of long-term debt	11,715	6,654
Accounts and payrolls payable	83,006	78,112
Accrued taxes	118,604	108,100
Other	70,850	67,312
Total current liabilities	<u>\$ 354,009</u>	<u>\$ 362,739</u>
RESERVES AND DEFERRED CREDITS (Note 2)	<u>\$ 23,644</u>	<u>\$ 20,846</u>
CONSTRUCTION PROGRAM AND CONTINGENCIES (Note 9)		
Total shareowners' interest and liabilities	<u>\$2,746,533</u>	<u>\$2,563,593</u>
	(Deductions in parentheses)	

(The accompanying notes are an integral part of the financial statements.)

General Telephone & Electronics Corporation and Subsidiaries

Consolidated Statement of Income

For the Years Ended December 31, 1963 and 1962

	<u>1963</u>	<u>1962</u>
	<small>(Thousands of Dollars)</small>	
TELEPHONE SUBSIDIARIES COMBINED		
Operating revenues	\$645,136	\$579,430
Operating expenses		
Operations	\$164,390	\$153,464
Maintenance	97,600	89,668
Depreciation	109,129	— 97,224
General taxes	54,123	49,060
Total	<u>\$425,242</u>	<u>\$389,416</u>
Operating income before income taxes	\$219,894	\$190,014
Federal and foreign income taxes (Note 2)	86,310	74,084
Net operating income	<u>\$133,584</u>	<u>\$115,930</u>
Miscellaneous income (deductions)—net (Note 3)	433	(129)
Income available for interest charges	<u>\$134,017</u>	<u>\$115,801</u>
Interest charges	41,971	39,523
Net income	<u>\$ 92,046</u>	<u>\$ 76,278</u>
Minority interest in net income	(5,534)	(5,689)
Preferred stock dividends	(12,740)	(12,139)
Net income applicable to GT&E	<u>\$ 73,772</u>	<u>\$ 58,450</u>
MANUFACTURING SUBSIDIARIES COMBINED		
Net sales	\$798,301	\$748,495
Costs, operating expenses, etc.		
Cost of sales	\$619,144	\$580,092
Selling and administrative expenses	84,569	83,312
Depreciation	19,652	17,517
Interest and other deductions—net	5,816	5,209
Total	<u>\$729,181</u>	<u>\$686,130</u>
Net income before income taxes	<u>\$ 69,120</u>	<u>\$ 62,365</u>
Federal and foreign income taxes	36,100	33,340
Net income applicable to GT&E	<u>\$ 33,020</u>	<u>\$ 29,025</u>
Combined net income of subsidiaries applicable to GT&E	\$106,792	\$ 87,475
GENERAL TELEPHONE & ELECTRONICS CORPORATION		
Expenses, interest, and taxes—net	(1,706)	(1,206)
Consolidated net income	<u>\$105,086</u>	<u>\$ 86,269</u>

(Deductions in parentheses)

(The accompanying notes are an integral part of the financial statements.)

Summary of Consolidated Statement of Income

For the Years Ended December 31, 1963 and 1962

	1963	1962
	(Thousands of Dollars)	
Revenues and net sales	\$1,443,437	\$1,327,925
Costs and operating expenses	1,149,418	1,071,258
Operating income before income taxes	\$ 294,019	\$ 256,667
Interest and other deductions—net	48,489	45,146
Net income before income taxes	\$ 245,530	\$ 211,521
Federal and foreign income taxes	722,170	107,424
Total net income	\$ 123,360	\$ 104,097
Preferred stock dividends of subsidiaries and minority interest in net income	18,274	17,828
Consolidated net income	\$ 105,086	\$ 86,269

Consolidated Statements of Earnings Retained for Use in the Business, and Amount Paid In, in Excess of Par Value of Common Stock

For the Year Ended December 31, 1963

	Earnings Retained	Amount Paid In
	(Thousands of Dollars)	
Balances December 31, 1962	\$ 281,901	\$ 342,095
Add:		
Consolidated net income	105,086	—
Amount recorded as consideration for common stock issued over par value thereof	—	7,566
Other—net	722	—
	<u>\$ 387,709</u>	<u>\$ 349,661</u>
Deduct:		
Cash dividends on common stock of GT&E	\$ 63,637	\$ —
Cash dividends on preferred stocks of GT&E	407	—
Write-off of cost of issuing and redeeming securities	3,845	54
	<u>\$ 67,889</u>	<u>\$ 54</u>
Balances December 31, 1963	<u>\$ 319,820</u>	<u>\$ 349,607</u>

(The accompanying notes are an integral part of the financial statements.)

NOTES TO CONSOLIDATED
FINANCIAL STATEMENTS

1. PRINCIPLES OF CONSOLIDATION

With minor exceptions, all telephone and manufacturing subsidiaries have been included in the consolidated financial statements.

During 1963, a total of 788,916 shares of common stock were exchanged for securities of three telephone companies and accounted for as poolings of interests. The 1963 consolidated financial statements reflect the operations of these companies from January 1, 1963. Inasmuch as 1962 consolidated financial statements would not be materially affected, these poolings of interests have not been reflected retroactively.

Certain manufacturing subsidiaries supply construction and maintenance materials, supplies, and equipment to the telephone industry, including affiliated and non-affiliated companies, at prices which are generally comparable for all companies. Purchases made by the telephone subsidiaries are recorded in the accounts of the companies, and are included in the consolidated statements, at cost to them which includes the return on investment realized by the manufacturing subsidiaries. However, the Federal income tax benefit resulting from the elimination, in the consolidated income tax return, of profits realized by the manufacturing subsidiaries on sales to the telephone subsidiaries for plant additions, has been allocated to the telephone subsidiaries and applied as a reduction to the plant accounts. All other significant inter-company items and transactions have been eliminated.

The underlying book values of investments in consolidated telephone subsidiaries at December 31, 1963, were \$92,011,000 in excess of the amount at which such investments were recorded by the owning companies. This amount represents undistributed earnings since dates of acquisition of \$104,348,000, which has been included in consolidated retained earnings, less the excess of cost of certain investments over underlying book value at dates of acquisition of \$12,337,000, which has been added to telephone plant. Investments in consolidated manufacturing subsidiaries are carried at underlying book values, and the undistributed equity in such companies arising since

acquisition, amounting to \$140,580,000 at December 31, 1963, is included in consolidated retained earnings.

2. INVESTMENT CREDIT

In accordance with the provisions of the Revenue Act of 1962, a credit is allowed against Federal income taxes otherwise payable based on the cost of certain property additions placed in service after December 31, 1961. The estimated amount of these investment credits as recorded in the accounts of consolidated subsidiaries, totaling \$6,222,000 in 1963 and \$4,065,000 in 1962, has been reflected in the consolidated financial statements as follows:

Manufacturing Companies—The investment credits of \$833,000 in 1963 and \$581,000 in 1962 have been applied as reductions in the net cost of the applicable property additions and are being amortized over the estimated service life of the property through reduced depreciation expense. The amount of such amortization was \$154,000 in 1963 and \$45,000 in 1962.

Telephone Operating Companies—The investment credits applicable to regulated telephone operating companies amounted to \$5,389,000 in 1963 and \$3,484,000 in 1962.

At December 31, 1962, the Federal Communications Commission and most other regulatory agencies had not yet determined the permanent accounting treatment which subject companies would be required to follow. For this reason, the total amount of the investment credits applicable to all regulated telephone companies was deferred in the consolidated financial statements, including \$1,216,000 applicable to companies operating in two states which had accounted for the investment credit as a reduction in the provision for Federal income taxes in accordance with orders or notices received from regulatory commissions. The accounts of all companies were adjusted to interim procedures authorized by the Federal Communications Commission.

In the 1963 consolidated financial statements, the investment credits for all telephone operating companies have been accounted for in substantially the same manner as recorded by the individual companies (including those amounts applicable to 1962 which had been adjusted). The investment credits for companies which are subject to the Federal

ARTHUR ANDERSEN & CO.

80 PINE STREET
NEW YORK 10003

To the Board of Directors
and Shareowners,
GENERAL TELEPHONE &
ELECTRONICS CORPORATION:

We have examined the consolidated balance sheet of General Telephone & Electronics Corporation (a New York corporation) and its subsidiaries as of December 31, 1963, and the related consolidated statements of income, earnings retained for use in the business and amount paid in, in excess of par value of common stock, for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying financial statements referred to above, present fairly the financial position of General Telephone & Electronics Corporation and its subsidiaries as of December 31, 1963, and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

ARTHUR ANDERSEN & CO.

New York, N. Y.
February 7, 1964.

The management intends to solicit proxies for the annual meeting of shareowners to be held on April 15, 1964. It is expected that formal notice of the meeting, together with proxy statement and proxy, will be mailed to the shareowners on or about March 9, 1964.

The information in this report is not given in connection with any sale or offer for sale, or offer to buy any securities.

If you own more than one type of our securities, you may receive more than one copy of this report. It is more economical to mail a small number of duplicates than to maintain the cross-reference check that would avoid them.

The securities of General Telephone & Electronics Corporation are listed on the New York Stock Exchange, the Midwest Stock Exchange, and the Pacific Coast Stock Exchange, and are also traded on many other exchanges.

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Communications Commission or which have not received permanent accounting orders from other regulatory agencies having jurisdiction have been deferred in the same manner as in 1962. The investment credits for companies which have received permanent accounting orders from regulatory agencies having primary jurisdiction have been reflected in the consolidated financial statements in accordance with such orders.

Pursuant to this accounting treatment, investment credits of telephone operating companies totaling \$3,317,000, of which \$1,216,000 applies to 1962, are included in consolidated net income for 1963.

As of December 31, 1963, investment credits of \$5,556,000 are included in reserves and deferred credits.

3. INTEREST CHARGED TO CONSTRUCTION
Interest charged to construction of \$3,094,000 in 1963 and \$3,013,000 in 1962 is included in miscellaneous income of telephone subsidiaries.

4. DIVIDENDS RECEIVED BY GT&E
Dividends received in 1963 from consolidated telephone and manufacturing subsidiaries were \$50,406,000 and \$22,770,000, respectively.

5. GT&E COMMON STOCK
Authorized 90,000,000 shares, \$3.33 1/8 par value, outstanding at December 31, 1963, 76,235,910 shares (including 95 shares reserved for scrip); 3,954,334 shares are reserved for conversions of debentures and preferred stock, employees' stock plan, and restricted stock option plans.

In 1963, GT&E issued 1,099,852 shares of common stock including 846,316 shares in exchange for securities of other companies; 32,211 shares on conversions of preferred stocks; 91,615 shares on conversions of debentures; 98,832 shares under the restricted stock option plans, and 30,878 shares under the employees' stock plan.

Consolidated earnings retained for use in the business of \$319,820,000 at December 31, 1963, was restricted as to the payment of cash dividends to the extent of \$127,209,000.

The shareholders approved a new restricted stock option plan in April, 1962, under which 1,000,000 shares of common stock were made available for option to officers and key employees of GT&E and

its subsidiaries at a price of not less than 100% of the fair market value of the stock on the date of grant. At January 1, 1963, options for the purchase of 7,500 shares had been granted under this plan. During 1963, options for 51,000 shares were granted, 3,000 shares were cancelled, and no options granted under this plan were exercised. At December 31, 1963, 55,500 shares were under option, and the balance of 944,500 shares were available for option.

Restricted stock option plans, previously approved or assumed, which have now expired, provided for the granting of options at a price of at least 95% of the fair market value of the stock on the date of grant. At January 1, 1963, there were 680,320 shares under option covered by such plans. During 1963, 98,832 shares were issued upon exercise of options, and options for 48,208 shares were cancelled. Options to purchase 13,179 shares of common stock granted under a plan of an acquired company were assumed by GT&E during the year. At December 31, 1963, 546,459 shares were under option under these plans.

6. GT&E PREFERRED STOCKS
Authorized 2,202,615 shares, \$50 par value, cumulative dividend. Outstanding at December 31, 1963 —

	Shares	Amount (In Thousands)
4.25% convertible	3,934	\$ 197
4.36% convertible	137,420	6,871
4.40% (not convertible)	3,255	163
4.75% convertible	1,066	53
5.28% convertible	26,190	1,309
Total	171,865	\$8,593

The preferred stocks, other than the 4.40% preferred, are convertible into common stock as follows:

- 4.25% — 3.6 shares through June 30, 1965, 3.3 shares thereafter through June 30, 1970, 3 shares thereafter.
- 4.36% — 2.4 shares through June 30, 1964, 2.28 shares thereafter.
- 4.75% — 9.45 shares.
- 5.28% — 3 shares.

During the year 12,787 shares (aggregate par value \$639,000) were converted into 32,211 shares of common stock (aggregate par value \$107,000).

7. LONG-TERM DEBT
Following is a summary of long-term debt at December 31, 1963 (exclusive of current installments and cash sinking fund requirements classified as current liabilities):

	Amount (In Thousands)
GT&E —	
4% convertible debentures, due 1971	\$ 6,307
4 1/4% convertible debentures, due 1977	9,123
4 1/4% sinking fund debentures, due 1975	7,040
4 3/4% sinking fund debentures, due 1987	50,000
4 1/4% sinking fund debentures, due 1988	50,000
Total	\$ 122,470
Telephone subsidiaries —	
2 3/4% to 6 1/4%	
Maturing—1965 through 1974 ..	\$ 96,327
—1975 through 1984 ..	277,557
—1985 through 1993 ..	489,392
Total	\$ 863,276
Manufacturing subsidiaries —	
3.2% to 7%	
Principally sinking fund debentures, due 1971-1984	\$ 110,205
Consolidated ..	\$1,095,951

The GT&E convertible debentures are convertible into common stock at the following prices, expressed in principal amount surrendered for conversion:

- 4% , due 1971 — \$16.72 through April 30, 1966, \$17.68 thereafter until maturity.
- 4 1/4% , due 1977 — \$16.27 through May 31, 1967, \$17.27 thereafter until maturity.

8. PENSION PLANS
With minor exceptions, all subsidiaries have pension plans which, for the most part, are maintained without cost to the employees. The plans provide for payment of pension accruals to trustees or insurance companies. The aggregate cost of maintaining these plans in 1963, including \$5,984,000 for amortization of past service costs, was \$26,111,000. Based on latest actuarial studies, the aggregate unfunded past service cost was approximately \$53,000,000, which generally is being amortized over various periods not exceeding 20 years.

9. CONSTRUCTION PROGRAM AND CONTINGENCIES
The subsidiaries' construction program for 1964 totals approximately \$312,000,000 including \$291,000,000 for telephone companies and \$21,000,000 for manufacturing companies. It is estimated that \$155,000,000 will be available from internal sources and that the remainder will require additional financing by the subsidiaries, a part of which will be provided by GT&E.

The consolidated companies are contingently liable with respect to taxes, suits, claims, renegotiation of government contracts, guarantees, etc. Available reserves are believed to be adequate to cover any material losses therefrom.

APPENDIX B

CRITICALITY STATION LIMITS U-235

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APPENDIX B

<u>I NORMAL LIMIT STATIONS</u>	<u>U-235 Kg</u>	<u>NUCLEAR SAFETY JUSTIFICATION</u>
A. Melt Charge	2	<p>This material is handled in approved melt trays (see fig. 17 page 70). This container has the following dimensions, 2.25 inches high by 11.5 inches wide by 17.25 inches long. At one end at the extreme lower section there is a drain hole 7 inches long by 1 inch high covered with metal screen. This is to provide moderation control through the elimination of water retention. The material involved is unalloyed U metal, aluminum, and uranium aluminum alloy. The melt composition varies from 9 to 35 weight percent of uranium. As per TID-7016 Rev.1, figure 1, this 2 Kg U-235 limit is safe.</p> <p>For further detail see sections VI.C.4, VI.D, VI.E.1.</p>
B. Ingots	2	<p>This material is also handled in melt trays. (See melt charge above for description.) An ingot and a slab are massive pieces of uranium aluminum alloy. An ingot is approximately 2 inches by 6 inches by 14 inches. A slab is approximately .3 inches by 6 inches by 8 feet. Slabs are sheared into three pieces, .3 inches by 6 inches by 2.5 to 3 feet. As per TID-7016 Rev.1, figure 1, this 2 Kg U-235 limit is safe.</p> <p>For further detail see sections VI.C.4, VI.D, VI.E.2.</p>

<u>NORMAL LIMIT STATIONS</u>	<u>U-235 Kg</u>	<u>NUCLEAR SAFETY JUSTIFICATION</u>
C. Slabs	2	Same as B. For further detail see sections VI.C.4, VI.D.
D. Punched Cores	2	This material is handled in plastic bags with a volume limit of 4.8 liters. The plastic bag is carried in the core box. (See Fig. 13 page 71). The cores are approximately .3 inches by 3 inches by 3 inches. The ceramic pellets are one-half inch in diameter by one-half inch in length. Punched cores are uranium aluminum alloy cut from slabs. Ceramic cores are uranium and stainless steel compacts after pressing and sintering. As per TID-7016, Rev. 1, figures 1 and 2, the combined volume and mass limits result in a safe limit. For further detail see sections VI.C.4; VI.D.
E. Picture Frame containing cores	2	This material is handled in core boxes. (See fig. 18 page 71) The core box is 3.5 inches by 3.5 inches by 16 inches. There are three-quarter inch holes at the extreme lower section of all four sides. This is to prevent water retention and enable moderation control. The material is placed directly into the box without additional containment which would affect the drainage from the holes in the box. As per TID-7016, Rev. 1, figure 1, this moderation control results in a safe limit.
F. Plates	2	This material is handled in either the tote trays (see fig. 16 page 69) or the fiberboard sleeve (see fig. 19 page 72). The tote trays have two three quarter inch diameter holes at both ends of the extreme

NORMAL LIMIT STATIONS

U-235
kg

NUCLEAR SAFETY JUSTIFICATION

P. Plates
(Cont'd)

lower section. The sleeves are open at both ends. The largest tote tray is 6 inches high by 8 inches wide by 47 inches long. The sleeve has an inside diameter of 4.5 inches and is 37 inches long. The plates are stacked flat on top of one another in both containers. The tote tray is considered safe due to moderation control and the close packing of plates. (As per TID-7016 Rev.1, fig. 1) The sleeve is considered safe due to moderation control and diameter limit (as per TID-7016, Rev. 1, figures 1 and 3). For further detail see sections VI.C.4, VI.D, VI.E.3.

G. Ceramic pressed and sintered cores 2

Same as D.
For further detail see sections VI.C.4, VI.D.

H. Ceramic pellets pressed and sintered

Same as D and G.
For further detail see sections VI.C.4, VI.D.

High enrichment 2

Low enrichment 15 liters A 15 liter container is safe as per TID-7016 Rev. 1 fig. 14

I. Alloy Scrap 2

Same as A.
For further detail see sections VI.C.4, VI.D.

J. Ceramic Powder 0.33)
High enrichment)
Low enrichment 0.8)

All of these materials because of their physical dimensions are mass controlled to a small quantity. A maximum of 0.33 kg. of U-235 for high enrichment material as per TID-7016, Rev. 1 figure 1, is safe. The limit of .8 kg. of U-235 for low enrichment material is safe as per TID-7016 Rev. 1 fig. 13.

K. Ceramic Cores (compacts) 0.33)
unsintered)
High enrichment)
Low enrichment 0.6)

For further detail see sections VI.C.4, VI.D, VI.E.3, VI.E.5.

L. Fins, Chips, Turnings 0.33)
High enrichment)
Low enrichment 0.6)

M. Fuel Assemblies 1

This material is not handled within containers. It is worked on and stored only on open work benches, shelves or

NORMAL LIMIT STATIONS

U-235
kg

NUCLEAR SAFETY JUSTIFICATION

M. Fuel Assemblies
(Cont'd)

tables. With this moderation control this limit is considered safe as per TID-7016, Rev. 1, figure 1. For further detail see sections VI.C.4, VI.D.

N. Low Enrichment Mass
(< 5%) Rods No limit

All material is processed and stored in Bldg. 4 with no mass limits because of moderation controls. Storage in bldg. 10 is limited to a 5.5 inch slab. This is considered safe as per TID-7016 Rev. 1 page 24 and KI019 page 17. For further detail see sections VI.C.1, VI.C.5., VI.D.4.

II HIGH LIMIT STATIONS

A. Unalloyed
Metal

10

Building 4 vault and mezzanine. Storage is in three associated plane arrays. The minimum spacing between container surface to container surface between arrays (rows) is 7.5 feet. The minimum center to center spacing of units within a single array (single row) is 24 inches. The maximum number of units within a single array (single row) is 90. The maximum number of units in each of these storage areas (vault and mezzanine) 180. These spacings meet the criteria stated in TID-7016, Rev. 1, table V and page 27. In order to insure proper spacing, there are 1 gallon cans bolted to each shelf. All raw material storage is in closed containers with a maximum capacity of 3.6 liters. This smaller container is stored within the 1 gallon cans. This is within the limits of AOS-64 table IV. In addition to this, the maximum mass per storage unit is 10 kg U-235. There is no sprinkler fire protection in either of these two areas and combustibles are strictly controlled. This storage is safe due to the container volume limit and mass limit. For further detail see section VI.C.

B. Ceramic Powder
High enrichment
Low enrichment

10

27 liters

Storage arrays as A above. The 27 liter container capacity limit is safe as per KI015 Table XVI page 17. For further details see section VI.C.

1/66
R-2

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HIGH LIMIT
STATIONS

U-235
kg

NUCLEAR SAFETY JUSTIFICATION

C. Scrap in Shipping Container

<3.2 grams per cc

The metal in this container will have a maximum density of 3.2 grams of uranium 235 per cubic centimeter. It will consist of uranium aluminum or uranium stainless steel. The forms are chips, turnings melt dross, crucible skulls, plates, cores etc. It is packaged in a plastic bag within a metal can. The can is 4.6 inches in diameter and 30 inches high. This can is placed within the scrap shipping drum. (See fig.22 page 91) As per TID-7016, Rev.1, figure 3, this is a safe diameter. For further detail see section VI.E.9.

D. Received Mt'l Storage High enrichment 10

Building 10 storage
The minimum outside dimension of any birdcage to be stored is 18 inches. There are no sprinkler or other sources of moderating material in the building and the birdcages are always sealed. With this moderation control a mass limit of 10 Kg U-235 can apply. (As per AG2-64 table IV) Storage is in a planar array. All units are separated by a minimum center to center spacing of 18 inches. This building is separated from the nearest special nuclear material storage by seventy-two feet. As per TID-7016, Rev. 1, page 27, this storage is considered isolated. The maximum quantity of U-235 within this building is 150 kg. As per TID-7016, Rev. 1, Table V the 18 inch center to center spacing is safe. For further detail see sections VI B., VI.C, VI.D.

Low enrichment 5.5 inches slab thickness

When this building is used for low enrichment material all high enrichment material will be removed. The material will be stored in a single plane with a maximum slab thickness of 5.5 inches. As per K1019 page 17 this limit is safe.

E. Pressed Ceramic Cores (compacts) 5

This limit for this form applies only to the sintering furnace. Material is brought to the furnace in maximum batches of 0.33 Kg of U-235. When one batch is loaded into the furnace boat (see fig.24 page 79) another batch can be brought to the furnace. This will be repeated until 5 Kg of U-235 has been loaded into

HIGH LIMIT U-235
STATIONS Kg

E. Pressed Ceramic
Cores (Compacts)
sintering
(Contd)

F. Furnace Heating 5
of Plates

NUCLEAR SAFETY JUSTIFICATION

the boat or boats. Not more than 5 kg of U-235 can be in the furnace at one time. The boats are designed not to retain any water and the furnace does not contain any water or other moderating materials. The furnace is sealed when loaded. The furnace chamber is a cylinder and is in a horizontal position about three and one-half feet off the floor. Flooding is not considered credible. With this moderation control this operation is considered safe as per TID-7016, Rev. 1, figure 1.

After sintering, up to 6 of the original .33 kg batches (maximum of 2 Kg U-235) will be removed from the boat and inserted into an approved container. It is then taken to the next production step or storage before any other sintered compact are removed from the boat. This is repeated until the furnace is completely unloaded.

For further detail see sections VI.D, VI.E.5.

There are two types of operations and furnaces involved. One is the annealing operation and the other is for preheating prior to hot rolling. The 5 Kg U-235 limit applies only to material within the annealing jig, the annealing furnace and within the hot rolling preheat furnace. All of these furnaces have a flat horizontal hearth and stand at least three feet off the floor. Flooding is not considered credible. None of the furnaces contain water or any other moderating materials.

As per TID-7016, Rev.1, fig.1, this is a safe limit.

For further detail pertaining to annealing see sections VI.D.5.g. and VI.E.6. and for hot rolling preheat see sections VI.D.5.g. VI.E.3. and Figure 20 page 77.

3/65
R-1

GTE 0000431

HIGH LIMIT STATIONS

U-235
Kg

NUCLEAR SAFETY JUSTIFICATION

G. Hot Ingot Rolling

6

This limit for this form applies only to the heating furnace. Material is brought to the furnace in maximum batches of 2 kg. of U-235. When the batch is placed into the heating furnace another batch can be brought to the furnace. This will be repeated until 6 kg. of U-235 (3 ingots) has been placed in the furnace. One ingot at a time is removed from the furnace and passed through the rolling mill. It is then returned to the furnace. This is repeated until the desired dimensions are reached. (.3 inches by 6 inches by 8 feet). Once the ingot has been rolled it is called a slab. The ingots lay flat side by side on the furnace hearth. There are no water connections to the furnace nor are there any moderating materials in it. The furnace stands three feet off the floor and flooding is not considered credible. This moderation control permits the safe use of the 6 kg. U-235 limit. (As per TID-7016, Rev. 1, Figure 1.) For further details see sections VI.D., VI.E.2.

H. Non Destructive Testing

.33

Within the ultrasonic equipment used the limit of .33 Kg applies. As per TID-7016 Rev. 1, Figure 1, this is a safe limit. For further details see VI.E.10.

I. Isostatic Pressing

4

One normal size truck is loaded into the vessel. The maximum inside diameter of the container is 5 inches. As per TID-7016, Rev.1, Figure 1, the 4 kg. mass limit for an H/X up to 15 is safe. The 5 inch diameter of the container is safe for an H/X greater than 15 as per Figure 3.

APPENDIX C

EMERGENCY PROCEDURES MANUAL

GTE 0000433

SYLCOX DIVISION OF SYLVANIA ELECTRIC PRODUCTS INC.

EMERGENCY PROCEDURES

During Normal Working Hours

Dial extension 234 - Action to be taken is described
in Sections I and II.

After Normal Working Hours

See following page No. 2.

This manual is to be readily available and used in case of an
emergency.

GTE 00000434

AEC PUBLIC DOCUMENT ROOM

AFTER NORMAL WORKING HOURS

The following steps are to be taken by the following persons:

- A. WHOEVER NOTICES THE EMERGENCY - Call Extension 234.
- B. THE GUARD ON DUTY - Call one of the following starting at top of list:

AEC FACILITY BUILDINGS 1, 2A, 3, 5, 6, 7, 8, 9	COMMERCIAL FACILITY BUILDINGS 2B, 4, 10, 11, 13, 15
---	--

E. Meyer.....Mirtle 2-6604	G. LaF,er.....516 HAMILTON 7-1062
P. May.....516 JUNIPER 1-1498	H. Watts.....516 ANDREW 1-2821

- C. WHOEVER IS CALLED BY THE GUARD - Call W. Mandaro 516 Mohawk 9-8486 and one person in each of the following:

List 1 Sylvania Electric Public Relations

Herbert Johnson.....	914 Overland 6-5572 (Espous, N.Y.)
Robert T. Sheeran.....	201 Dumont 5-5117 (Dumont, N.J.)

List 2 Local Public Relations

W. Mandaro.....	516 Mohawk 9-8486
W. Nelson.....	516-277-2884

List 3 Safety

Henry E. Grieb.....	Wells 8-5173
Mark A. Bruck.....	516 Forest 8-2511

List 4 Security

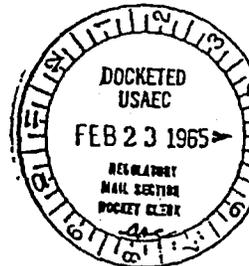
Henry E. Grieb.....	Wells 8-5173
Robert Mullen.....	516 Andrew 1-7435

List 5 Insurance

Peter Garst.....	914 Swiftwater 3-3638
------------------	-----------------------

- D. WHOEVER IS CALLED UNDER LIST 2 PUBLIC RELATIONS - Call the following:

Radiation Officer, Atomic Energy Commission.....	212 Yukon 9-1000
--	------------------



SYLOR DIVISION OF SYLVANIA ELECTRIC PRODUCTS INC.
Hicksville, New York

EVACUATION INSTRUCTIONS

SECTION I
SAFETY DEPARTMENT

GTE 0000436

EVACUATION INSTRUCTIONS

When an alarm is sounded or you are directed by P.A. announcement to evacuate the buildings, all personnel will promptly leave all buildings by the nearest exit and report to the Assembly Area (see Note below for special instructions). If an exit is in some way obstructed by fire, smoke or debris, know and use the second most accessible exit.

When the radiation alarm sounds, it is of the utmost importance for your safety that you immediately report to the assembly area.

Note: Hydrogen Alarms are located in the Commercial Production building #4. When this alarm is sounded in building #4, all personnel in this building only will evacuate and report to the assembly area.

Sprinkler Alarms are located in Commercial Production building #4 and AEC fuel buildings #1 and 2. When the alarm sounds, evacuate only the building in which the alarm is sounding. Report to the assembly area.

Radiation Alarms are located in buildings #1, 2 and 4. When this alarm is sounded everyone in the building is to exit immediately and report to the assembly area. Do not under any circumstances delay, even for a moment, making your exit.

Classified Papers that you have in your possession must be taken with you when you leave the building and given to the Security Guards.

Reporting of Fire and/or Emergency

A. During Normal Working Hours (8:00 A.M. to 4:30 P.M.)

Step 1. Dial 234, state your name, building number, exact location in the building, nature and seriousness of the incident, persons injured and the telephone extension number that you are using. Based on your information, the Guard will by P.A. announcement, first direct all personnel to evacuate the building involved and secondly, direct the Emergency Control Group to the scene of the fire and/or emergency. If it becomes necessary to evacuate all buildings, you will be so advised by P. A. announcement.

NOTE: Pull the nearest fire alarm station if you cannot promptly contact the Guard, or if you are told that the P. A. system is inoperative.

Step 2. If in your opinion the incident is serious enough to warrant immediate evacuation of the buildings, pull the nearest fire box.

Reporting of Fire and/or Emergency continued

A. Step 3. If you have no assigned duties leave the buildings and report to your assembly area.

B. After Normal Working Hours, Saturday, Sunday and Holidays

Step 1. Dial 234, state your name, building number, exact location in building, nature of incident, persons injured and the telephone extension number you are using.

Step 2. If in your opinion the incident is serious enough to warrant immediate evacuation of the building, pull the nearest fire alarm box after you have dialed 234.

Step 3. If you are in a position to safely correct or aid in correcting the incident, do so, if not, leave the building.

Evacuation Signal Sounds

Fire Alarm	Continuous pulsating ring signal that indicates the building involved by the number of rings.
Hydrogen Alarm	"Klaxon" horn signal.
Sprinkler Alarm	Clanging signal.
Radiation Alarm	Loud resonating horn signal plus flashing blue warning lights.

ACT

1. P.A. Announcement	-	Leave the building or buildings announced.
2. Fire Alarm Signal	-	One ring, leave building #1 only. Two rings, leave building #2 only. Three rings, leave building #3 only. Four rings, leave building #4 only.
3. Hydrogen Alarm Signal (Building #4)	-	Leave building involved only.
4. Sprinkler Alarm Signal (Buildings #1, 2 or 4)	-	Leave the building in which the alarm sounds.

ACT continued

5. Radiation Alarm Signal - Leave building involved only.
Buildings #2, 4, 10, 14)
6. Announcement - ALL CLEAR to re-enter buildings.

Evacuation of the Buildings

Important - Leave the building via the nearest exit and report directly to the assembly area.

Note: Foremen and Supervisors are responsible before evacuating the building to promptly inspect their respective work areas and adjoining accommodation facilities to make sure that all non-fire-fighting personnel have safely evacuated from the building.

Exception: When the Radiation Alarm sounds everyone is to leave the building immediately. There must not be any delay in immediate evacuation.

Assembly Area

Report promptly to your assembly area located in parking field #2 adjacent to the main guardhouse. (See attached drawing.) Stay with your assigned facility or service sections (AEC facility, Commercial Facility, and Area Service). Your section locations are posted on the security fence. As an added precaution the Security Guards will direct you to another area of safety whenever the incident warrants such action. If you are in the assembly area because the radiation alarm was sounded, you must line up in a single file. This is to enable us to monitor the I.D. badges as rapidly as possible.

Note: Area Service - Purchasing, Accounting, Safety, Medical and Personnel

For your own protection, remain in the assembly area until further orders are issued, such as the "All Clear" signal. Avoid interfering with the functions of the Emergency Control Group and the local authorities.

Public Relations

Because you will not have all the facts, any information requests are to be directed to the Public Relations group at the Personnel Department Office, otherwise you create misunderstanding and this you should not do.

Alarm Tests

Alarm tests will be conducted at specified intervals, and at such times the above procedures should not be applied. Before such tests are run, you will be notified by P. A. announcement.

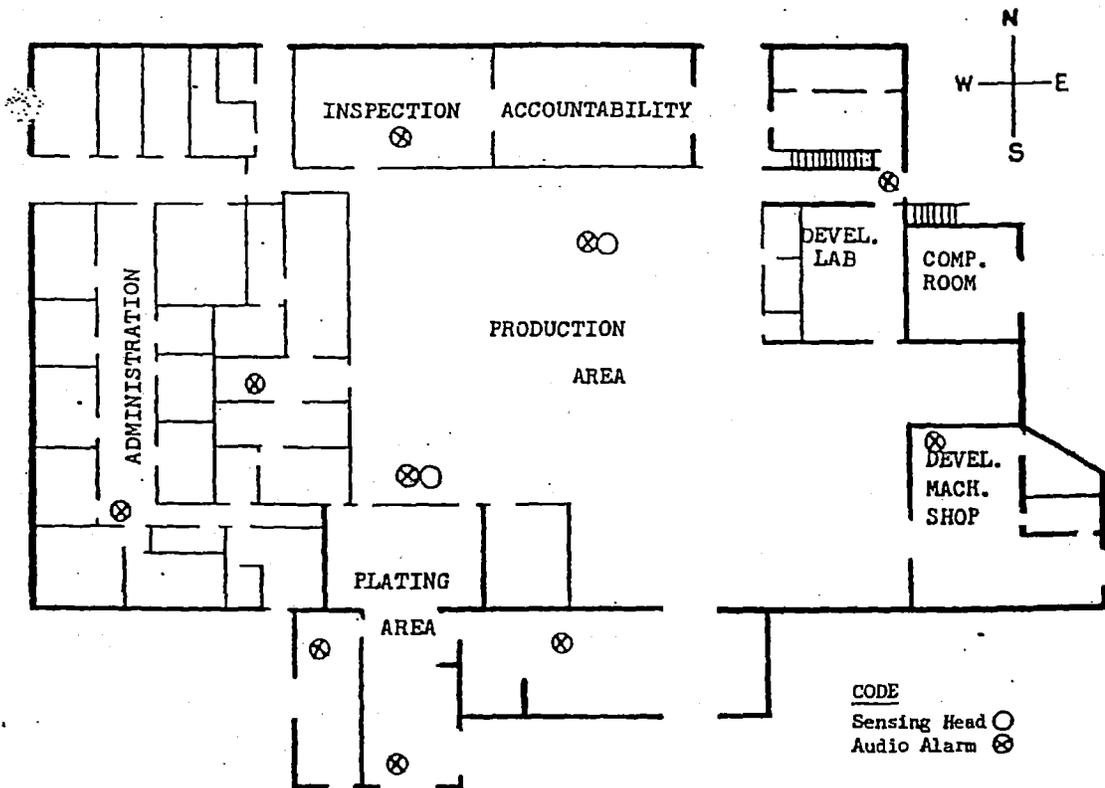
Personnel Radiation Report

Name (Print)		ID #	Date
Read	Time	Monitored By	

BUILDING #1

Instructions

1. Mark on this form, with an "X", the location you were when the alarm sounded.
2. Indicate with a solid line the route you used to leave the building.
3. Hold report - Monitor will pick it up from you.



00337C

GTE 0000440

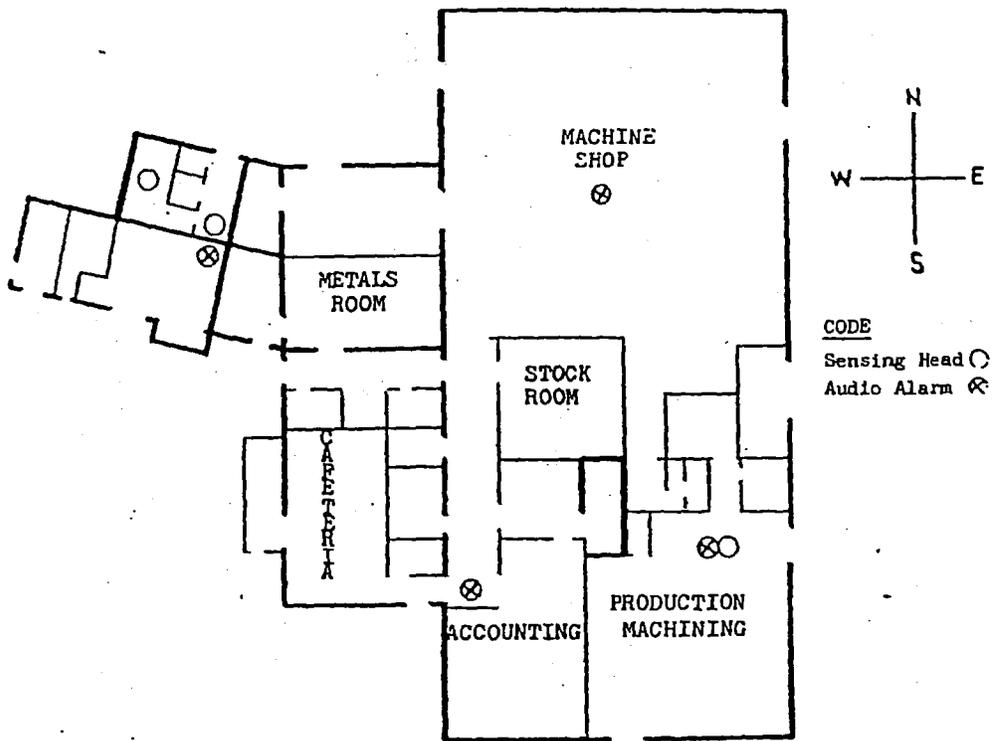
Personnel Radiation Report

Name (Print)		ID #	Date
Read	Time	Monitored By	

BUILDING #2

Instructions

1. Mark on this form, with an "X", the location you were when the alarm sounded.
2. Indicate with a solid line the route you used to leave the building.
3. Hold report - Monitor will pick it up from you.



00337F

GTE 0000441

Personnel Radiation Report

SECTION I
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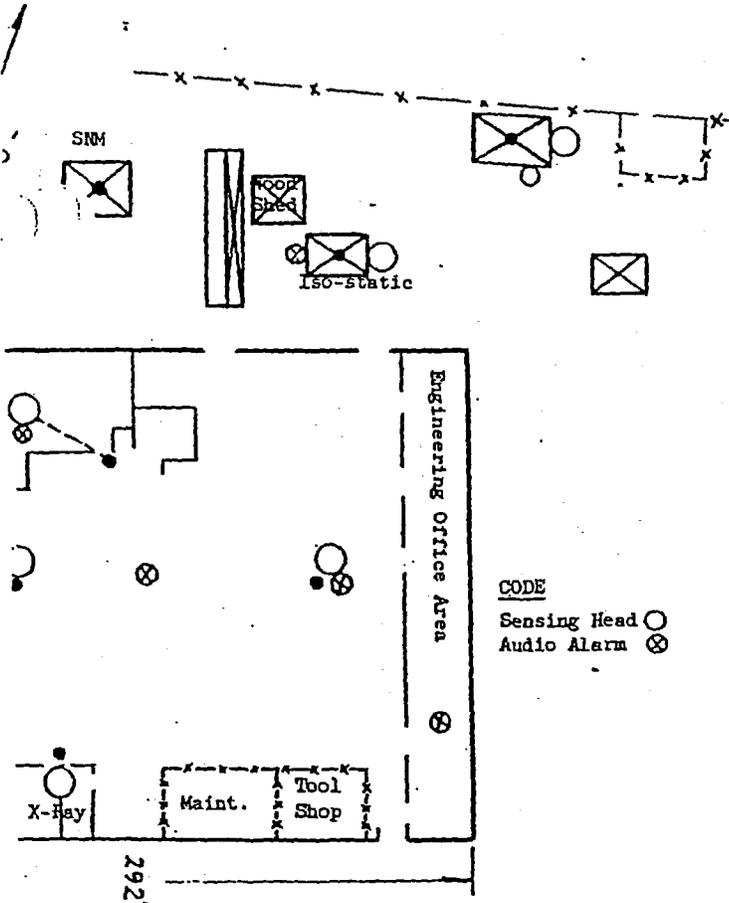
ID # _____ Date _____

Monitored By _____

Instructions

1. Mark on this form, with an "X", the location you were when the alarm sounded.
2. Indicate with a solid line the route you used to leave the building.
3. Hold report - Monitor will pick it up from you.

Guardhouse



r attack will be attained by

ls away from windows and doors
ection of the structural walls
t them.

ess who may become involved in
amage will report the occurrence

30 PM) Monday through Friday

ier WELLS 1-3500
daro WELLS 1-3500

iday and Holidays

1-3500

; your location, telephone
need of assistance.

afety Department.

stop working and leave the

Blue signal lights. Leave the
radiation exposure is directly
ake to leave the building.

sembly area next to the guardhouse

cate on this report with an "X"
Also indicate with a solid
g (refer to Personnel Radiation

Radiation Alarm continued

E. Hold Report - An I.D. badge monitor will pick up the report from you.

F. The evacuation routes to be used are as follows:

1. Building #4

PURCHASING AREA

Everyone in this area leave
by the front door.

TOOL ROOM, MAINTENANCE
X-RAY, CHEM CLEANING,
PLATE INSPECTION AREA
AND INSPECTION ROOM

Leave by the nearest exit,
either through the Purchasing
Department or through the
southeast exit door.

ENGINEERING OFFICE AREA

Leave by the northeast door.

ALL OTHER AREAS

Leave by the nearest exit.

2. Building #2

MACHINE SHOP, MAINTENANCE,
STOCK ROOM, CAFETERIA,
ACCOUNTING DEPARTMENT

Leave by the exit adjacent to
the cafeteria.

PRODUCTION MACHINING

Leave by the southwest door.

ALL OTHER AREAS

Leave by the nearest exit.

3. Building #1

OFFICE AREA AND DRAFTING
ROOM

Leave by the main entrance.

METALLOGRAPHY, CHEM LAB,
INSPECTION AND AREA
AROUND FINAL CLEANING

Leave by the front office
area and main entrance.

ACCOUNTABILITY, IN-LINE
AREA, RIGERS PRESS AREA,
VB DIE ASSEMBLY AND CAN
ASSEMBLY ROOM

Leave by the north door.

EQUIPMENT DEVELOPMENT

Leave by the east door.

DEVELOPMENT AREA

Leave by the northeast door.

SECTION I
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DINING ROOM Leave by the south door.
ELECTRICAL ROOM Leave by the south door.
REST ROOM Leave by the west door.

Instructions listed above are planned for your safety and must be

SECTION I
Page 7 of 8 pages
October 1963

INSTRUCTIONS

Employees on company property must be taken by those in charge at any time.

Fire extinguishers for any purpose must be taken as authorized by the Fire Department.

Non-residential work areas must be equipped with adequate fire extinguishers for welding or burning canisters. Upon completion of work, fire extinguishers are to be returned to the Fire Department.

Employees in areas where "No Smoking" signs are posted are responsible for the maintenance of these signs.

Fire extinguishers and fire blankets are to be used at all times.

Fire extinguishers are to be used in roadways in any emergency.

Fire alarm system, due to maintenance will inform employees. The report will be made to the start of work and employees are to be taken to prevent fire.

Fire extinguishers shall be used.

Fire, all chairs, stools, and tables are to be placed on top of the work areas.

Employees are to participate promptly in fire drills and operations carrying out of such drills.

GTE 00000446

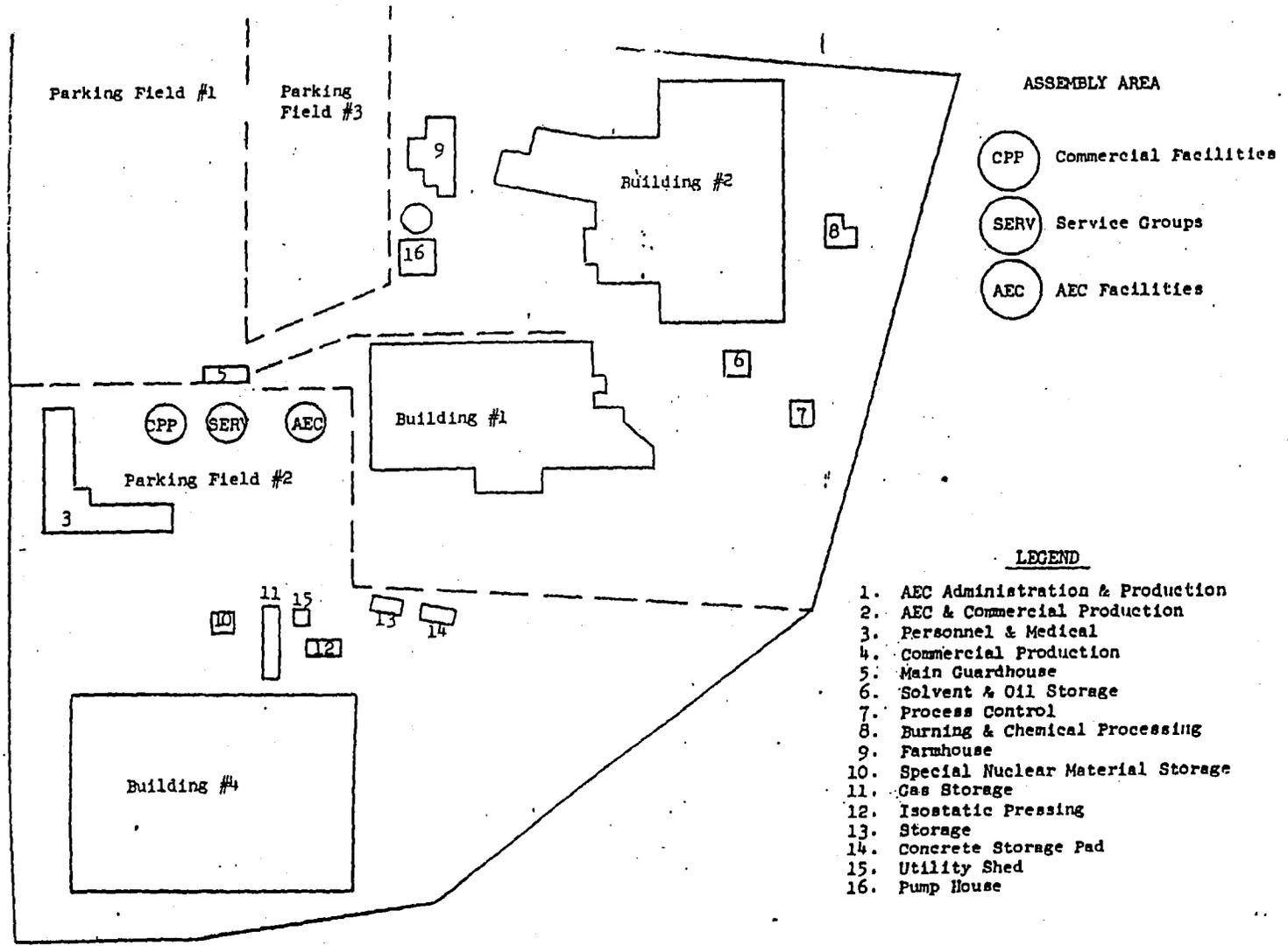
GTE 00000445

SECTION I
Page 8 of 8 pages
October 1963

General Fire Protection Instructions continued

11. Tampering or destroying of the fire or other alarm systems, or firefighting equipment is a violation of company policy. Offenders will be subject to disciplinary action.

GTE 0000447



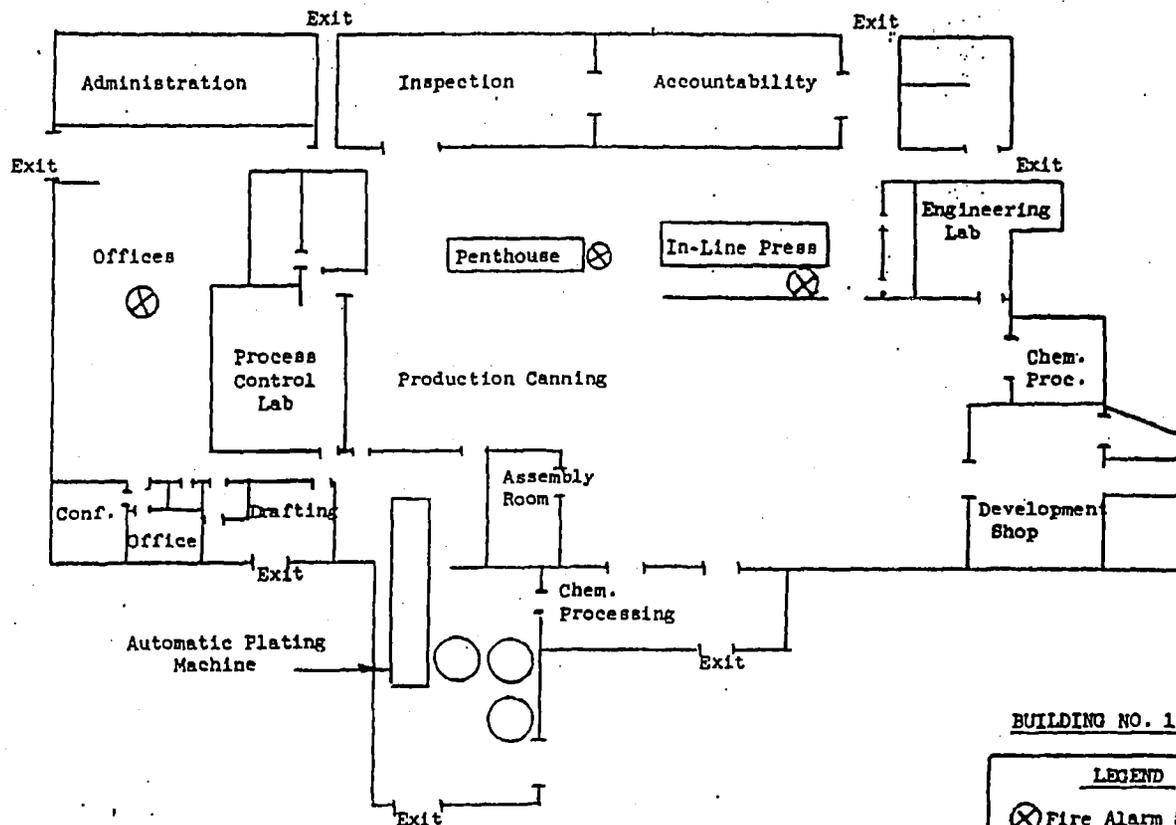
ASSEMBLY AREA

- CPP Commercial Facilities
- SERV Service Groups
- AEC AEC Facilities

LEGEND

1. AEC Administration & Production
2. AEC & Commercial Production
3. Personnel & Medical
4. Commercial Production
5. Main Guardhouse
6. Solvent & Oil Storage
7. Process Control
8. Burning & Chemical Processing
9. Farmhouse
10. Special Nuclear Material Storage
11. Gas Storage
12. Isostatic Pressing
13. Storage
14. Concrete Storage Pad
15. Utility Shed
16. Pump House

GTE 00000448

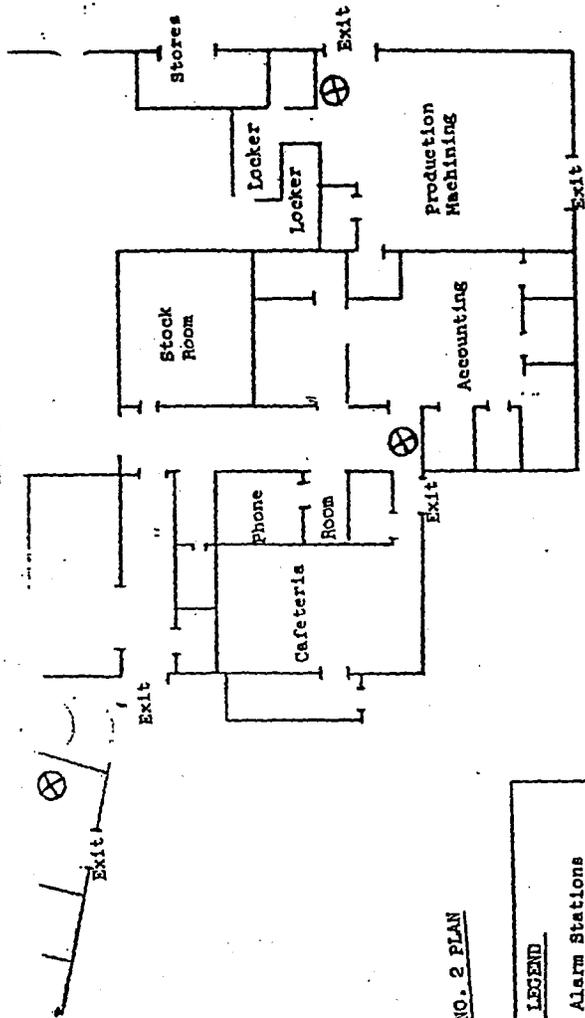


BUILDING NO. 1 PLAN

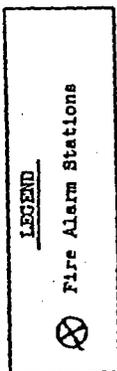
LEGEND

⊗ Fire Alarm Stations

GTE 00000449



BUILDING NO. 2 PLAN



TS INC.

ROUP

SECTION II
SAFETY DEPARTMENT

GTE 00000452

GTE 00000450

FIRE AND EMERGENCY INSTRUCTIONS

The Emergency Control Group is organized for emergency service consisting of fighting fire and rendering such service as is incident to firefighting and for emergencies of any nature. It assumes an important role in protecting lives and preventing costly damage to company property.

GTE 00000453

Fire and Emergency Responsibilities of Coordinator

The Coordinator assumes complete direction and provides for the safety of personnel and visitors in accordance with the procedure in Section I "Evacuation Instructions". With the assistance of the Assistant Coordinator, Fire Chief, he is responsible for coordinating the firefighting, emergency radiation activities, rescue operations and for disseminating information to management.

In such emergencies he shall:

1. Report to the Main Gate House. This will be the Coordinator's Station (Emergency Headquarters). Take charge of the Employee Register, Visitor Register and Cleared Personnel Books.
2. Establish communications with the Fire Chief and set up concrete measures for being kept informed of firefighting activities. Ascertain extent of fire or emergency from him or his assistants.
3. Inform the Personnel Department of the names of all injured and the extent of injuries and disposition.
4. Direct activities of the Security Guards via the Guard Supervisor where practicable.
5. Details of the incident are to be reported immediately to the Public Relations Supervisor at the Personnel Department. These details are to include what happened, where, who was injured, and the seriousness of the incident. As other developments occur, they are to be reported immediately.
6. Admittance to the plant is to be restricted to Sylcor people and civil officials unless authorized by the Public Relations and Security Supervisor.

Assistant Coordinators

The Manufacturing Managers of the AEC Facility and the Commercial Facility are designated as Assistant Coordinators of the facility to which they are in charge. In this capacity they shall assist the Coordinator, and in his absence shall assume complete charge of the Emergency Control Group and carry on the duties of the Coordinator.

Fire Chief

1. The Fire Chief shall assist the Coordinator by taking immediate direction of the squads when the alarm is sounded.

The Guards are to use the following procedures during an emergency that occurs outside of the normal work hours and during a holiday or weekend.

I. Equipment breakdown, water leak or power failure

A. Turn off the controlling valves or switches and take any other safety precautions indicated or required.

B. Telephone

1. The engineer, technician or production individual responsible for the equipment.

2. One of the following, starting from the top of the list:

AEC Facility - Buildings 1, 2A, 3, 5, 6, 7, 8 and 9

J. Bauer.....Walnut 1-7542
E. Rebers.....516 Andrew 5-1693
M. Popowicz.....Pioneer 7-5764

Commercial Facility - Buildings 2B, 4, 10, 11, 12, 13 and 15

R. Alto.....516 Andrew 1-4764
N. Sonesen.....FReport 9-6831

II. Any injury or exposure to toxic or radioactive materials

A. Telephone

1. Dr. W. Young.....516 Hamilton 3-8848

2. If Dr. Young cannot be contacted telephone-

Dr. Catalanello.....Hollis 5-7494 (Office Phone)
Bayside 4-1182 (Home Phone)
Jamaica 6-7500 (Jamaica Hospital)

3. H. E. Grieb.....Wells 8-5173
Mark Bruck.....516 Forest 8-2511

NOTE: If the injury is of a very serious nature, telephone the Mineola Ambulance Service (Pioneer 6-1300) and have the injured person taken to the Huntington Hospital. Then call the Huntington Hospital (516 Hamilton 3-6400) to tell them that an injured person is being sent by ambulance and that the injured person is to be placed under the care of Dr. W. Young.

SECTION IV
Page 3 of 4 pages
October 1963

alarm is sounded, immediately record the
ctly follow the instructions "Radiation
osted on the radiation panel located in

.....WELLS 8-5173
.....516 FOREst 8-2511

following, starting from the top of

.....516 HAMILton 7-1062
.....516 HAMILton 3-7898
.....516 ANDrev 1-4764

.....MOhawk 9-8486
.....MYrtle 2-6604
.....516 ANDrev 1-2821

enter the building area. Prohibit others
and guide them to the assembly area.

not covered by the above, or an incident
involves which involves Sycor.

following, starting from the top of the

Buildings 1, 2A, 3, 5, 6, 7, 8 and 9)

.....MOhawk 9-8486
.....WALnut 1-7542
.....MYrtle 2-6604

(Buildings 2B, 4, 10, 11, 12, 13 and 15)

.....516 HAMILton 7-1062
.....516 HAMILton 3-7898
.....516 ANDrev 1-4764

in one of the above lists is to call:

.....516 HAMILton 3-5324

ION V
1 of 3 pages
ber 1963

means of general
immediately after
ember of his staff.
of the installation
Company", because
impression that the
and should contain
v.

Public Relations
r of Public Rela-
ger of Community
sylvania) corpora-
tions Department
v, Industrial

lished rapidly.
If this is not
ed immediately
, and the text

will become widely
reparation and
it await the avail-
quire a prolonged
, and resistance
in larger commu-
rage is closely
its.

spapers and TV am
rdless of whether
Taking the initi-
ing exaggerated and
depends primarily
and TV-radio
to those newspapers

ts. (See Appendix

GTE 00000464

GTE 00000461

Public Relations Immediate Release, B. continued:

3. Names, ages, addresses, occupations of persons injured, and general nature of injuries, plus mention of fact that emergency medical attention was given, and injured then taken to hospital, or released.
 4. Statement that an investigation has been initiated to determine the exact cause of the accident or emergency.
 5. General description of work being done at the installation.
 6. Statement that the accident is non-nuclear (if appropriate), that there is no radioactivity, (if true), and no damage to the community.
- C. Read the prepared statement and then distribute copies.
- D. Answer questions.
- E. If restricted areas are involved, (i.e., areas in which work of a Government security nature is being conducted), or if the accident area is deemed to be unsafe, or if "Company Confidential" equipment is involved, these points should be cited in explaining to the press that they cannot enter the accident area.
- F. Photographs
1. If photographs within Company property limits are requested, they should be permitted unless they would specifically violate military security, or would endanger the photographer, or reveal information of a "Company Confidential" nature (damage in itself to buildings or routine equipment is not deemed to be "Company Confidential" whereas photographs revealing a new device, equipment, or process which has not been patented, or is not believed to be known to the competition, would be deemed to be "Company Confidential").
 2. Apparent violations of these restrictions should be immediately brought to the attention of the local manager. Plant guards must be specifically warned against the use of force; in the event that they witness an apparent violation of the above mentioned restrictions, they should detain the violator, thoroughly check his credentials, and notify the public relations supervisor.

Specifically, if the guards believe unauthorized photographs have been taken, they should not seize the photographic equipment or film, but should detain the photographer and notify the public relations supervisor.

Public Relations Immediate Release, F. Photographs continued:

3. If the public relations supervisor agrees that unauthorized photographs apparently have been taken, he should:
 - a) Explain why he believes this to be the case.
 - b) Request the photographer to surrender his exposed film, or request that an appropriate individual on the plant or laboratory staff accompany the photographer to his darkroom, watch the photographer develop all exposed film, review prints of the resultant negatives, and impound all negatives and prints believed to be in violation of the above restrictions.
4. If the photographer refuses to comply with this request, an executive (city editor, managing editor, executive editor) of his newspaper or news service should be contacted immediately and the circumstances explained. The situation can usually be resolved without difficulty.
5. As soon as possible after the accident, inform all employees that all requests from public information media for comments, eyewitness accounts, etc., should be referred to the person designated in Item A.
6. Press or TV-radio interviews of public safety personnel, or non-employee eyewitnesses, bystanders, etc., are of course, outside the Company's jurisdiction.

FOLLOW-UP ACTIVITIES

After the first public statement, follow-up statements should be released (see Appendix 2) as additional information becomes available and as circumstances warrant. Depending upon the nature of the accident, public opinion may quickly decrease or may be sustained as a controversy for a considerable period. The latter depends upon the skill and speed of the Company's public relations activities, as well as the extent to which other organizations or individuals are involved, particularly law enforcement agencies, civic or community groups, legislative bodies, or whether the accident becomes a vehicle for stimulating a controversy between competing local groups, etc.

The duration and nature of the Company's informational activities will, therefore, depend upon the circumstances, and will be resolved through close coordination between the local installation and the Public Relations Department in New York.

PERSONS IN CIVIL ORGANIZATIONS THAT MAY HAVE
TO BE CONTACTED ON SAFETY PROBLEMS

of Explosives (I.C.C.)

. E. Striker.....Inspector
. C. George.....Chief Inspector
. G. McKenna.....Chief Chemist
. White.....Inspector

State Department of Labor
Division of Industrial Hygiene

UTE CARD

. Morris Kleinfeld.....Director
Herbert P. Abrahams.....Radio Physicist
R. R. Johnson.....Radio Physicist
R. Kingsley.....Inspector
A. Miele.....Health Physicist

City Department of Health
Division of Radiation Control

. F.....Director
. K. Holz.....Chief Registration

Energy Commission

. Breslin.....NYOO, Chief, Fire & Accident Branch
. Weinstein.....NYOO, Industrial Hygienist
. Weintraub.....NYOO, Fire & Accident Branch
. Hayes.....Washington D. C., Chief of Health & Safety
. Brannigan.....Washington D. C., Fire & Accident Branch
. Parriott.....SROO, Chief, Safety Branch
. Herde.....SROO, Chief Industrial Hygiene Branch
. Dietz.....SROO, Chief, Nuclear & Industrial
Safety Branch

Allegheny Fire Department

. Telender.....Fire Chief

County

. Lynch.....Fire Marshall
. Cussamano.....Inspector Health Department

GTE 00000470

00000474

SYLOR

ROUTE CARD

PAGE 1 OF 2 PART NO. A-32942

BATCH

TIME 5 DATE 6/21/63 QUANTITY PART NAME CORE

PLANNED BY J. Nylin PRODUCTION ORDER NO 3215 - ETR (STD)

APPROVED ENG.

Q. S. Darwin

R. Siehler

DISPATCHED BY J. Gullo

RAW MATE
MATE SIZE
MATE FROM
PLANNED FOR

OPER NO	DESCRIPTION	COM- PLETED
1 10	1. core melt charge as per E.L. #1 - Attachment #2	
2 10	2. core as per E.L. #1 - Attachment #1	
3 10	3. roll as per E.L. #1 - Attachment #3 - EXCEPT CROSS ROLL TO 9" TO 10" WIDTHS - Remove graphite before rolling - Use VIBEC TOOL	
4 11	4. density and shear ingot as per E.L. #1 - Attachment #4	
5 11	5. core as per S.L. #1 - Attachment #5	
6 11	6. anneal ingot - 1175° - 10" for one-half (1/2) hour	
7 11	7. core as per E.L. #1 - Attachment #4	
8 20	8. case ALL as per Spec. 5250 - Operation #1	
9 20	9. core in blisters - and use Vibec tool	
10 20	10. density to take density as per E.L. #1 and assign rolling	
11 20	11. core as per E.L. #1 - Sheet #2	
12 20	12. core roll strips to attached dimensions - Note - CORE MUST BE HELD	
13 20	13. core roll strips to attached dimensions and record as #1, case as per E.L. #1 - Sheet #3	

GTE 00000478

Order No.
Order Designation:

CRITICALITY LIMIT REPORT

Page 1 of 2

		Fuel Plates		Cores		
				Lower	D-235	Limit No.
Process Step	Form Incoming	Form Outgoing	Limit	Per Piece	of Pieces	
Prepare Melt Charge	Raw Material	Raw Material	2000 g	Std	g charges	
				Cont	g charges	
				Part	g charges	
Melting & Casting	Raw Material	Ingot	2000 g	Std	g ingots	
				Cont	g ingots	
				Part	g ingots	
Slab Rolling - Hot (____ Ingot allowed in Furnace during pre-heat)	Ingot	Slab	2000 g	Std	g slabs	
				Cont	g slabs	
				Part	g slabs	
Slab Rolling - Cold	Slab	Slab	2000 g	Std	g slabs	
				Cont	g slabs	
				Part	g slabs	
Core Punching & Machining	Slab	Core	2000 g	Std	g cores	
				Cont	g cores	
				Part	g cores	
Cleaning - Vapor Degrease	Core	Core	2000 g	Std	g cores	
				Cont	g cores	
				Part	g cores	
Core & Cover Assembly	Core	Pack	2000 g	Std	g packs	
				Cont	g packs	
				Part	g packs	
Rolling - Hot (____ Plates allowed in Furnace during pre-heat)	Pack	Plate	1000 g	Std	g plates	
				Cont	g plates	
				Part	g plates	
Rolling - Cold	Plate	Plate	1000 g	Std	g plates	
				Cont	g plates	
				Part	g plates	
Annealing - Blister	Plate	Plate	4000 g (Furnace Only)	Std	g plates	
				Cont	g plates	
				Part	g plates	
Fluoroscope	Plate	Plate	1000 g	Std	g plates	
				Cont	g plates	
				Part	g plates	
Shear, Blank and/or Form	Plate	Plate	1000 g	Std	g plates	
				Cont	g plates	
				Part	g plates	
Finishing - Acid	Plate	Plate	330 g	Std	g plates	
				Cont	g plates	
				Part	g plates	

GTE 00000482

APPENDIX F

NON-COMINGLING LETTERS

GTE 0000484

Order No.
Order Designation:

CRITICALITY LIMIT REPORT

Page 1

		Fuel Plates		Cores	
Partial Standard Control					
Process Step	Form Incoming	Form Outgoing	Lower Limit	U-235 Per Piece	Limit No. of Pieces
Preheat Melt Charge	Raw Material	Raw Material	2000 g	Std Cont Part	g charges g charges g charges
Melting & Casting	Raw Material	Ingot	2000 g	Std Cont Part	g ingots g ingots g ingots
Slab Soaking - Hot	Ingot	Slab	2000 g	Std Cont Part	g slabs g slabs g slabs
(Ingots allowed in Furnace during pre-heat)					
Slab Soaking - Cold	Slab	Slab	2000 g	Std Cont Part	g slabs g slabs g slabs
Cooling & ...	Slab	Core	2000 g	Std Cont Part	g cores g cores g cores
Cleaning - Vapor	Core	Core	2000 g	Std Cont Part	g cores g cores g cores
Core Cover	Core	Pack	2000 g	Std Cont Part	g packs g packs g packs
Reheat	Pack	Plate	1000 g	Std Cont Part	g plates g plates g plates
(Plates allowed in Furnace during pre-heat)					
Reheat	Plate	Plate	1000 g	Std Cont Part	g plates g plates g plates
Annealing	Plate	Plate	4000 g (Furnace Only)	Std Cont Part	g plates g plates g plates
Flattening	Plate	Plate	1000 g	Std Cont Part	g plates g plates g plates
Slab Form	Plate	Plate	1000 g	Std Cont Part	g plates g plates g plates
Acid	Plate	Plate	330 g	Std Cont Part	g plates g plates g plates

Sylcor Division
Sylvania Electric Products Inc.
Cantiague Road
Hicksville, New York 11802

Subject: Non-Commingleing Certification

Gentlemen:

I hereby certify that the shipments of special nuclear material from the Sylcor Division of Sylvania Electric Products Inc., located at Hicksville, Long Island, New York, being shipped to _____

_____ located at _____

_____ will:

1. Not be transported on the same vehicle with other packages identified as containing special nuclear material such as uranium 235, uranium 233 and plutonium.
2. Be transported to _____ terminal
_____ located at _____
with no intermediate unloading or transshipment.

Very truly yours,

(Transporting Company)

(Date)

(Authorized Signature)

(Title)

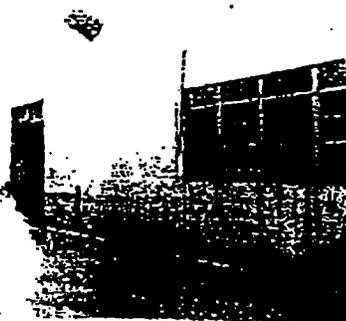
GTE 00000486

APPENDIX C

SOFTWARE TESTING

GTE 00000487

PHOTOGRAPH #1



PHOTOGRAPH #2

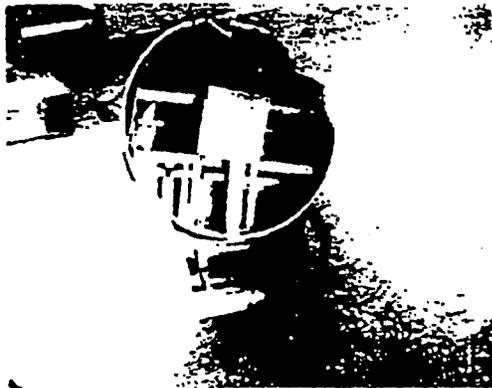


GTE 0000488

PHOTOGRAPH #3



PHOTOGRAPH #4



GTE 00000489

GLOSSARY OF TERMS

as used in

SYLCOR'S APPLICATION FOR RENEWAL

of LICENSE SM 82

- Alloy** Alloy is a metallic mixture of uranium and aluminum in various weight percents of uranium. Also includes tertiary alloys such as uranium aluminum and trace amounts of boron.
- Assembly** An Assembly is a partially completed fuel element, usually consisting of fuel plates joined into a geometric shape but prior to final attachment of nozzles, and boxes, etc.
- Batch** The term batch and control batch are used interchangeably. A Batch is a unit of material or of fuel element components or a completed group of assemblies or elements which contain up to the amount of U-235 specified in Appendix B. It is the quantity of material that is processed or handled in any one container or area.
- Slab** A Slab is an Ingot which has been hot rolled into a long slab of U/Al alloy (typical dimensions 6 inches x 30 inches x .200 inches)

GTE 0000490

Cermet A Cermet is uranium-ceramic material such as UO_2 , or U_3O_8 plus a metallic powder sintered into a Core.

Compact A Compact is a coupon of U/SS that has been blended and cold compacted.

Container Container is the general term used for a variety of pans, boxes, trays, etc. used to handle a Batch of SIM between operations.

Core A Core is a rectangular coupon of U/Al punched from a slab or a uranium-stainless steel coupon that has been sintered (typical dimensions 4 inches x 4 inches x .030 inches thick).

Cover Plate A Cover Plate is a sheet of pure aluminum or stainless steel used to provide the cladding on each side of the Core and Frame (typical dimensions 4 inches x 3 inches x .030 inches).

Criticality Station A Criticality Station is a specific, clearly defined area such as a press, shear, rolling mill, etc., at which a defined operation is performed.

Fuel Plate A Fuel Plate is a tri-layer plate of aluminum or stainless steel. The center section contains

GTE 00000491

Fuel Plate U/Al or uranium stainless steel. The center section is completely enclosed on all six sides by either aluminum or stainless steel (typical dimensions .050 inches or .050 inches x 3-1/2 inches x 30 inches to 45 inches).

Ingot An Ingot is a rectangular uranium-aluminum casting, usually 2 inches x 6 inches by 10 inches.

Operation An Operation is the work performed on a fuel element component. Examples: Melting, rolling, shearing, radiography, inspecting.

Picture Frame A Picture Frame is a rectangular piece of pure Al with a pierced rectangular hole (typical dimension outside 4 inches x 4 inches x .080 inches thick. The hole size matches the Core size).

Platelets A Platelet is constructed similar to a Fuel Plate but smaller in size (typical dimensions .050 inches to .060 inches x 2-1/2 inches x 2-1/2 inches).

GTE 00000492

Fuel Plate U/Al or uranium stainless steel. The center section is completely enclosed on all six sides by either aluminum or stainless steel (typical dimensions .050 inches or .060 inches x 3-1/2 inches x 30 inches to 48 inches).

Ingot An Ingot is a rectangular uranium-aluminum casting, usually 2 inches x 6 inches x 10 inches.

Operation An Operation is the work performed on a fuel element component. Examples: Melting, rolling, shearing, radiography, inspecting.

Picture Frame A Picture Frame is a rectangular piece of pure Al with a pierced rectangular hole (typical dimension outside 4 inches x 4 inches x .030 inches thick. The hole size matches the Core size).

Platelets A Platelet is constructed similar to a Fuel Plate but smaller in size (typical dimensions .050 inches to .060 inches x 2-1/2 inches x 2-1/2 inches).

High Enrichment U-235 content of special nuclear material 50% or greater.

Low Enrichment U-235 content of special nuclear material 5% or less

GTE 00000493

AEC FUEL WASTE WATER

February 2nd, 1960

L. Watts

Safety Department

At the bottom of your "Action Responsibility Chart" for waste water you indicated that you intend to use the Commercial sump. The Commercial sump must not be used for waste water that contains any uranium or nickel.

Samples must be taken on any water that you intend to pump into the Commercial sump to prove that there is no uranium or nickel.

MEC:rw

Henry K. Orieb

cc: M.M. Coburn
T. O'Connor
E. Meyer
L. Carr

THIS COPY FOR

SYL 000130

ACTION RESPONSIBILITY MATRIX

PROJECT TITLE For all Plate, Plate Machine and Sump	ACTION TOPIC												RESPONSIBILITY	
	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER		
1) Correct Split Drains														H. E. Watts
2) Acid & Uranium		X	X										X	
3) Caustic		X	X											
4) Cooling					X	X								
5) Drawings		X	X											
6) Solo-Bridge														A. Andersen
7) Installation Component										X	X			
8) Plate Line				X	X									
9) Plate Machine			X	X										
10) Nickel Tower														A. Andersen
11) Experiments			X	X										A. Andersen
12) Confinement			X	X										A. Andersen
13) In Operation					X	X				X	X			A. Andersen
14) Sump Cleaning														E. Meyer
15) 1) Digging		X	X											E. Meyer
16) 2)		X	X							X	X			E. Meyer
17) 1)		X	X						X	X				E. Meyer
18) 4) Dispersion Points					X	X								A. Andersen

* Sump #1 will be secured for at least one week for pump out and drying and one week for clean out, during this time the use of Commercial Sump will be needed. For cleaning Sump #2 waste water will be directed to Sump #3.

H. E. Watts

12/7/59

One

Two

SYLVANIA

SYLVANIA ELECTRIC PRODUCTS INC. Subsidiary of GENERAL TELEPHONE & ELECTRONICS CORPORATION

Wells 1-3500
Twx No. HDvl 2358

30
20



Sylcor Division

Cantique Road
Hicksville, N. Y.

March 16, 1964

Mr. Ernest B. Tremmel, Director
U.S. Atomic Energy Commission
Division of Industrial Participation
Germantown, Md.

Dear Mr. Tremmel:

At your suggestion, I am setting forth below some facts concerning the organization, facilities, past record, and capabilities of the Sylcor Division of Sylvania Electric Products Inc.

This information is provided in support of our belief that the Sylcor Division can be of great assistance to the U.S. Atomic Energy Commission by reason of its reservoir of technical knowledge and its manufacturing know-how. Such assistance can be two-fold: (1) in the long-range planning of the AEC; (2) in the solution of technical and manufacturing problems that arise daily.

Sylvania Electric

The Sylcor Division is one of nine operating divisions of Sylvania Electric Products Inc. Sylvania is a diversified, technologically oriented manufacturing company and is a leader in the fields of electronics, television-radio, lighting, chemistry, metallurgy, and atomic energy. Its net sales in 1963 were \$473 million, and are expected to surpass \$500 million in 1964. Electronics for defense accounts for about 30% of the total volume.

Sylvania is a subsidiary of General Telephone & Electronics Corporation, one of the country's leading communications and electronics enterprises. GT&E's total revenues and sales in 1963 were more than \$1.4 billion.

Sylcor has the full support of these large, successful, and highly regarded organizations.

NUCLEAR FUEL ELEMENTS



CUSTOM METALLURGY

SYL00106274

Sylcor Facilities

The Sylcor Division's headquarters, laboratory, and manufacturing plants are located at Hicksville, Long Island, N. Y. Hicksville, 30 miles from New York City, is located on a major highway and on a major branch of the Long Island Railroad.

The Sylcor buildings contain 103,000 square feet of space devoted to research and engineering, manufacturing, and associated activities. There are two manufacturing plants:

The AEC Manufacturing Plant -- devoted basically to the production of fuel elements for the manufacture of plutonium at Savannah River. This plant accounts for 70% of the total sales volume of the Sylcor Division. (Detailed review below)

The Commercial Manufacturing Plant -- basically this plant produces fuel elements for research and test nuclear reactors, both in the United States and abroad. (Detailed review below)

Sylcor has 264 "Q"-cleared employees -- engineers, technicians, and manufacturing personnel -- who are highly qualified to work on AEC projects of both a metallurgical and a mechanical nature.

The technical group at Hicksville consists of 12 metallurgical and mechanical engineers, four equipment designers, and 19 technicians. In addition, there are exceptionally efficient groups working in such areas as accountability, accounting, document control, purchasing, quality control, and security.

Cost and Production Scheduling

Sylcor, as well as other Sylvania divisions carrying out contracts for the Federal Government, has an impressive record of cost accountability and cost consciousness. The Division is thoroughly familiar with accountability procedures for both normal and enriched material, and its cost accounting procedures have been audited and approved by the AEC auditors. Our people are cognizant of all the reporting procedures required by the AEC.

A review of all projects we have undertaken for the AEC in the past will show that we never have failed to meet a production schedule. A review of certain AEC Surveys concerning the Sylcor Division -- including Accountability Surveys, Management Surveys, and Security Surveys -- will indicate the high caliber of our operation. These Surveys are obtainable from the Savannah River Operations Office, as well as from the Commission's offices in Washington.

AEC Work

Over the past ten years, most of Sylcor's efforts have been directed at the production of fuel elements for the manufacture of plutonium for the Government's weapons program. During this period, Sylcor has produced a substantial percentage of the fuel requirement for plutonium manufacture at Savannah River.

In addition, Sylcor invented a process to clad fuel elements that improved yields by 25%. This process now has been installed at Savannah River. Further, Sylcor has designed and built tooling and equipment for Savannah River, and has contributed a number of metallurgical advances that have reduced costs on the elements now being used for plutonium production.

In the past few months, Sylcor's work with the AEC has been cut by approximately 30%, and we have reason to believe that further curtailments are imminent. We consider the possibility that the Commission will rule that all fuels for Savannah will be made at one location. If this is the case, we consider the likelihood that all fuels will be produced at Savannah River because of fixed overheads that will not be changed by subcontracting this work.

We respectfully call attention, however, to the fact that cladding costs per element are lower at Sylcor.

Other Areas of Government Work

One Sylcor research and advanced development group specializes in high-temperature coatings for refractory metals and super-alloys. This group has produced coatings that have performed exceptionally well in jet engine parts and rocket nozzles.

As another example, Sylcor's experience with cladding and composite material techniques resulted in our furnishing the bimetallic foil used as the skin material for Telestar. We have also produced thick bonded composite aluminum-copper alloys for other areas in the space program.

Commercial Work

Our commercial operation has produced in excess of 12,000 nuclear fuel elements for the USA and 11 foreign countries, fueling 51 different reactors and supplying components for numerous critical experiments. Since 1956 approximately 6,000 kgs. of enriched uranium as metal or oxide has been processed by the group.

The commercial group, a completely Sylvania-owned and equipped facility, is thoroughly familiar with conventional melting and rolling techniques as well as the powder metallurgy process used in the manufacture of fuel

elements. We are also equipped for hot roll bonding, assembly, non-destructive testing, and machining methods characteristic of the fuel field. In addition, our facility encompasses such techniques as isostatic pressing, complete radiograph and fluoroscopy facilities, tool shop, precision machining, an assembly area, all types of welding, and facilities for proper packaging and shipping of radioactive materials.

We have had experience also in the encapsulation of pellet type oxide fuels in stainless steel, aluminum, or zircalloy, including the technique and facilities for sodium bonding if required.

Summary of Sylcor Capabilities

In conclusion, I cite the following capabilities of Sylcor for the consideration of the members and staff of the Atomic Energy Commission:

- ... Support of the Division by Sylvania, and by the parent company, General Telephone & Electronics.
- ... Excellent research and manufacturing facilities.
- ... An unusually capable staff.
- ... A high degree of cost accountability and cost consciousness.
- ... An unexcelled history of meeting production schedules.
- ... The record of Sylcor's past accomplishments for the AEC.
- ... Creativity, sophistication, and diversification in the commercial field.

We are truly grateful for the confidence the Atomic Energy Commission has shown in Sylcor in the past. We sincerely hope that the Commission, in its future planning, will take full cognizance of Sylvania's past performance, as well as of the many capabilities cited above which, we believe, have a direct bearing on the success of the AEC mission. We will welcome the opportunity to meet with any members of the USAEC organization at any time.

Sincerely yours,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.


D. B. Metz
Manufacturing Manager

DBM/gg

Draft prepared by
R. A. McFeely
P & C Branch
February 21, 1957

~~SECRET~~
UNCLASSIFIED
SAVANNAH RIVER OPERATIONS OFFICE

*1 of 6 copies
for [unclear]
Draft A*

1. Name and Address

Sylvania Electric Products, Inc.
Atomic Energy Division
P. O. Box 59
Bayside, New York

Document No. SR A-103

2. Contract Number

AT(30-1)-1293

This document consists of 6 pages
No. 1 of 1 Copies, SERIAL DRAFT

3. Statement of Work

The Contract was transferred to the Savannah River Operations Office from New York Operations Office July 1, 1954.

General Scope

Sylvania manufactures, tests, inspects and delivers to SRP uranium and thorium metal and alloy slugs canned in aluminum jackets.

Scope of Work during 1957

Sylvania Proposal of August 8, 1956 - Incorporated in the Contract by Mod. No. 14

Work Estimate

Mark VII. - Hollow natural uranium

Gross Quantity - 488,600 (approximate number per day - 2,000; per month - 40,000)

Labor	\$710,260	\$1.53	Unit Cost
Materials	701,470	1.51	" "
Overhead	950,470	2.05	" "
Total	\$2,362,200	\$5.09	" "

Stripping
of 100,000
S-Cores \$173,110 \$1.73 Unit Cost

~~SECRET~~

DEPARTMENT OF ENERGY SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date: <u>4/10/83</u>	Determination (Circle Number)
Authority: <u>DA DC D ADD</u>	1. Classification Unchanged
Name: <u>Billack</u>	2. Classification changed to:
2nd Review Date: <u>4/10/83</u>	3. Classification Canceled
Authority: <u>ADD</u>	4. Other: <u>CG-NRP-2</u> 200
Name: <u>Werner J. Rindler</u>	

UNCLASSIFIED

*Approved for release
ATC (30-1)-1293*

~~SECRET~~

Mark VIII - Solid U-235-Al ~~6.14.57~~

Gross Quantity	- 57,750	(approximate number per day - ³¹⁰ 9,000 ;	per month - ⁶⁵⁰⁰ 65,000)
Labor	\$78,020	\$1.37	Unit Cost
Materials	81,600	1.43	" "
Overhead	100,815	1.77	" "
Total	\$260,435	\$4.57	" "

Total Estimated Cost \$3,000,230 (including equipment)
 Total Fixed Fee 167,842
 Rate of Fee to Applicable Base 6%

Sylvania Proposal for additional work during FY 1957, dated September 5, 1956 -
 Incorporated in the Contract by Mod. No. 15

	<u>Mark II</u> Solid enriched U-235-Al & Thorium	<u>Mark VIII</u> Solid U-235-Al 6.14.57	<u>Total</u>
Gross Quantity	5,200	4,800	10,000
Direct Labor	\$12,020	\$6,580	\$18,600
Overhead	16,225*	8,495*	24,720
Direct Charges	<u>7,660</u>	<u>6,860</u>	<u>14,520</u>
Total Operating Cost	\$35,905	\$21,935	\$57,840
Fee 6%	<u>2,155</u>	<u>1,315</u>	<u>3,470</u>
Total Cost Plus Fee	\$38,060	\$23,250	\$61,310
Equipment (Polyvinyl Chloride Blower)	<u>900</u>	<u>- -</u>	<u>900</u>
Total	<u>\$38,960</u>	<u>\$23,250</u>	<u>\$62,210</u>

*Overhead computed at 135%, the rate estimated for the period of September and October, 1956.

**Overhead computed at 129%, the rate estimated for March, 1957.

~~SECRET~~

~~SECRET~~

Anticipated Scope of Work For FY 1958

It is expected that Sylvania will begin canning all Mark VII slugs used at SRP in May 1957. The production quantity will level off to about 20% of the present production rate or about ten thousand slugs per month. This rate is expected to continue through the Calendar Year 1957.

4. Term of Contract

Contract was entered into December 10, 1951, and expires June 30, 1957.

5. Type of Contract

Cost-plus-fixed-fee

The average rate of fixed fee for performance of work under the contract has been 6% of the estimated cost.

6. Amount of Contract

<u>Period</u>	<u>Cost of Work (Exclusive of Fixed Fee)</u>	<u>Fixed Fee</u>	<u>Total</u>
12/10/51 - 6/30/54 (NYOO)	\$3,951,805	\$172,150	\$4,123,955
7/1/54 - 6/30/57 (SROO)	5,534,887	308,734	5,843,621
Total	\$9,486,692	\$480,884	9,967,576

Summary of Contract and Modifications Thereto

	<u>Operating Costs & Plant & Equipment</u>	<u>Fixed Fee</u>	<u>Total</u>
✓ Original	\$ 3,133,897	\$ 120,000	\$3,253,897
Modification 1	736,103	No Change	736,103
Modification 2	No Change	No Change	-----
Modification 3	No Change	No Change	-----
Modification 4	No Change	No Change	-----
Modification 5	229,850	52,150	282,000

~~SECRET~~

Modification 6	No Change	No Change	-----
Modification 7	99,500	No Change	99,500
Modification 8	562,463	37,190	599,653
Modification 9	1,450,795	84,028	1,534,823
Modification 10	(765,114)	(57,146)	(822,260)
Modification 11	410,142	17,000	427,142
Modification 12	No Change	No Change	-----
Modification 13	1,007,901	56,350	1,064,251
Modification 14	3,000,230	167,842	3,167,072
Modification 15	58,740	3,470	62,210
Total	\$9,486,692	\$480,984	\$9,967,576

7. Points of Interest

A portion of the Hicksville Plant (known as Site "B") comprising approximately 5,000 sq. ft. has been released to Sylvania for use in performing outside work. This work will in no way be connected with work under Contract No. AT(30-1)-1293. As a result of releasing this space, reduction/in the month rental rate was obtained. ~~of about \$3,000~~

The Contract was amended by Modification No. 12 to permit Sylvania to perform work for other Commission offices or their cost-type contractors by means of an Appendix "C" Agreement to Contract No. AT(30-1)-1293. No work has been performed under an Appendix "C" Agreement to date.

General

8. Cost Information

A. Payments made to date:

Under NYOO Scope

FY 1952	\$ 607,884
FY 1953	2,395,827
FY 1954	<u>1,106,229</u>
Total	\$4,109,940

Under SROO Scope

FY 1955	\$ 766,122
FY 1956	1,505,929
FY 1957 to	<u>2,007,493</u>
2/18/57	
Total	\$4,279,544

B. Investment in Plant & Equipment	\$1,875,229
Less Reserve for Depreciation	785,603
Net Plant & Equipment as Calendar Year 1/31/57	<u>\$1,089,626</u>

C. Breakdown of Costs for FY 1956 and FY 1957		
	<u>FY 1956</u>	<u>FY 1957 thru 12/31/57</u>
Plant & Equipment	\$ 190,579	\$ 24,505
Operations	<u>1,863,917</u>	<u>1,590,389</u>
Total	<u>\$2,054,496</u>	<u>\$1,622,894</u>

D. Cost of Rental or Occupancy	
FY 1955	\$ 57,800
FY 1956	59,495
FY 1957 thru 1/31/57	<u>43,036</u>
Total cost by SROO thru 1/31/57	<u>\$160,331</u>

E. Division Prorate

Contract AT(30-1)-1293 share of indirect cost for procurement, administrative and accounting services incurred by Sylvania AED.

FY 1956	\$172,208
FY 1957 thru 1/31/57	119,118

F. Overhead

<u>Composed of:</u>	<u>FY 1956</u>	<u>FY 1957 to 1/31/57</u>
Indirect Labor	\$133,532	\$ 96,673
Expense Labor	213,430	185,773
Payroll Costs	137,557	121,570
Occupancy	59,495	43,036
Utilities	45,157	29,910
General Plant	50,254	24,203
Indirect Materials	38,064	40,928
Division Prorate	172,208	119,118
G & A Expense	33,230	26,605
O/H Transfer to Site B	- - -	(22,317)
Total Overhead	<u>\$882,927</u>	<u>\$665,499</u>

G. Sylvania Unit Costs

	<u>Type</u>	<u>Operation</u>	<u>Total Cost</u>	<u>Unit Cost</u>	<u>No. Units</u>	<u>Measure</u>
			*			
FY 1956	Mark VII	Drilling	171,244	2.08	82,395	Pounds
	Mark VII	Canning	1,116,195	2.54	439,492	Pounds
	Mark VIII	All Costs	156,828	.26	604,934	Grams U-235
	Mark II	All Costs	148,662	8.10	18,348	Pounds
FY 1957	Mark II	Reclaiming	2,527	.91	2,774	Pounds
	Mark II	Canning	20,706	2.65	7,806	Pounds
	Mark VII	Reclaiming	83,984	.40	212,551	Pounds
	Mark VII	Canning	1,361,752	1.23	1,104,382	Pounds
	Mark VIII	All Costs	202,774	.18	1,139,444	Grams U-235

* Total Costs and Unit Costs are exclusive of depreciation.

Office Memorandum • UNITED STATES GOVERNMENT

TO : R. D. Hollingsworth, Assistant General Counsel
Deputy for Administration, Washington
(THRU) El J. Bick, Director, Div. of Production
FROM : G. D. Blair, Manager
Savannah River Operations Office

SUBJECT: SYLVANIA-CORNING NUCLEAR CORPORATION, EXPANSION OF
PLANT IN HICKSVILLE, NY

The following information is submitted pursuant to the request made by you at the indemnity meeting in Washington on March 21 in order that a determination may be made relative to the inclusion of the statutory indemnity article in Contract AI(30-1)-1293 between Sylvania-Corning Nuclear Corporation (Syl-Cor) and Savannah River Operations Office.

The work performed by Syl-Cor under Contract AI(30-1)-1293 is performed at its Hicksville, Long Island, plant and involves the canning of natural uranium into fuel elements for SBOO and also, to a small degree, the development of new element types. No enriched uranium is handled by Syl-Cor under this contract, and the maximum expected inventory of normal uranium at any one time at that plant would be one hundred tons. We would not expect there to be any possibility of an explosion in connection with the work under the contract, but it is possible that a fire might occur. Since there is no sprinkler system provided in that portion of Syl-Cor's facilities devoted to this contract work, it is also possible that any fire could be of some magnitude.

Hicksville, Long Island, has a population of 14,000 and is located approximately 25 air miles from the Pennsylvania Railroad Station, New York City. The population of greater Hicksville is between 100,000 and 200,000. The Syl-Cor plant is located approximately 1 1/2 to 2 miles from downtown Hicksville in an industrialized zone. Within a 1/2-mile radius there are several small industrial firms and a large aircraft company is located a mile or two away.

The Syl-Cor plant at Hicksville comprises two major production buildings containing over 80,000 square feet of

A. L. Hollingsworth

space, plus auxiliary buildings housing their purchasing and accounting departments, with about 120 people being engaged in work under Contract AT(30-1)-1295 at that site. At the same location, and separated only by a thin masonry wall, Syl-Cor conducts commercial activities in the atomic energy field. In its commercial activities at Hicksville, Syl-Cor regularly works with enriched uranium, and its production superintendent is responsible for both its commercial and government activities at that site. The commercial work being performed by Syl-Cor at Hicksville is performed, so we understand, under a license or licenses obtained from the Commission. However, we understand that between 85% and 90% of the work being performed at Hicksville by Syl-Cor is performed under Contract AT(30-1)-1295.

In addition, Syl-Cor has recently constructed at Hicksville another facility, which is located approximately 60 yards distant from the plant in which the SROO work is being performed. This new facility will also be used by Syl-Cor in its private commercial atomic energy activities.

Under our contract with Syl-Cor, a monthly occupancy charge is paid to Syl-Cor for the use of its facilities in lieu of an allowance for rent, insurance, taxes, etc. The occupancy charge includes coverage for both fire insurance and for public liability insurance against damage to persons and properties of employees of Syl-Cor, except workmen's compensation, or of third persons, as well as automobile insurance. Premiums for workmen's compensation insurance are reimbursed by SROO through direct payments. We understand that the public liability insurance carried by Syl-Cor, and for which premiums are included in our occupancy charge, is in the amount of \$5,000,000.00. In addition, our contract includes a "Model P" indemnity clause against loss or damages resulting from nuclear incidents which are not covered by insurance. We also understand, however, that Syl-Cor recently obtained a "binder" for insurance against nuclear incidents with respect to its atomic energy activities at Hicksville and at its other locations in the amount of \$10,000,000.00. Presumably this was obtained as a result of its private atomic energy activities, since approval was not requested of SROO, and, as of this date, no reimbursement has been made by SROO for this type of insurance.

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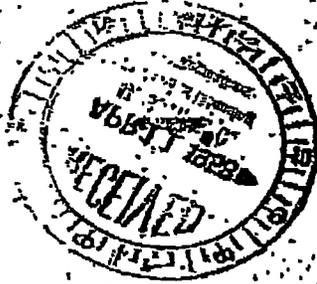
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R. E. Hollingsworth - 3 -

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The term of our present contract expires on June 30, 1958, and present production schedules indicate the contract will be extended beyond that date.

In view of the foregoing and while we recognize that there is some possibility of a nuclear incident at the Hickville plant which could cause damage in excess of \$1,000,000.00, we recommend that statutory indemnity not be extended to the work being performed by Syl-Cor at Hickville, Long Island, under Contract AT(30-1)-1298.



This document consists of 103 pages.
No. 2 of 12 copies, Series A

CONTRACT NO.. AT(30-1)-1293

CONTRACT

CONTRACTOR AND ADDRESS: SYLVANIA ELECTRIC PRODUCTS, INC.
1740 Broadway
New York, New York

CONTRACT FOR: RESEARCH AND DEVELOPMENT

TERM OF CONTRACT: December 10, 1951 to June 30, 1953

LIMIT OF GOVERNMENT LIABILITY: \$3,253,897.00

PAYMENT TO BE MADE BY: Division of Disbursement,
United States Treasury Department,
New York, New York.
Submit invoices to:
United States Atomic Energy Commission,
P. O. Box 30, Ansonia Station,
New York 23, New York

BASIS OF AWARD: NEGOTIATION

Priority Rating

In accordance with authority delegated to the Atomic Energy Commission by the National Production Authority, this contract is rated DO-E-2, certified under EDA Regulation 2.



Authorized Representative

SROO Response to
FOIA (SR) - 04-028

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THIS CONTRACT, entered into as of the 10th day of December, 1951, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SYLVANIA ELECTRIC PRODUCTS, INC. (hereinafter referred to as the "Contractor"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, with its principal place of business in New York City, New York;

WITNESSETH THAT:

WHEREAS, by Letter Contract No. AT(30-1)-1293, dated December 10, 1951, the Government and the Contractor agreed, among other things, that the Contractor would perform for the Government the research and development work provided for in said Letter Contract; and

WHEREAS, the Government and the Contractor, as contemplated by said Letter Contract, have negotiated and arrived at this definitive agreement which merges with and supersedes said Letter Contract; and

WHEREAS, this contract is authorized by law, including the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto agree as follows:

ARTICLE I - SCOPE OF THE WORK

1. The Contractor shall conduct studies, experimental investigations and other research and development work for the Government, the details of which research and development work are set forth in the classified Appendix 'B' to this contract. A copy of said Appendix 'B' signed by the Contractor is on file in the offices of the Commission and said Appendix 'B' is incorporated herein by reference and made a part hereof.

2. The Contractor shall furnish all materials, equipment, facilities and premises, and all other properties and services requisite to the proper performance of the work under this contract, except to the extent that the Government may elect to furnish such properties or services.

ARTICLE II - SITE OF THE WORK

1. Principal Site

The principal site of the work of this contract shall be the land and plant of the Contractor on Cantigue Road in Hicksville, Long Island, including, but only from January 1, 1953 on, the one-story frame building at this location, leased at the date of commencement of the period of performance of the work of this contract, to the United States Department

of Agriculture, unless the Commission approves a substitute site in writing and until the date approved by the Commission for such substitution.

2. Alteration at Site

The Contractor shall alter the plant and other facilities at any principal site of the work, referred to in paragraph 1 above, to the extent the Commission considers such alterations necessary to the proper performance of the work hereunder.

3. Transfer of Site

The Contractor shall not sell, lease, license or otherwise transfer ownership or occupancy of any plant space or other facilities at any principal site of the work referred to in paragraph 1 above, or of said site or any portion thereof, without the approval of the Commission.

4. Non-Contract Activities

The Contractor shall not engage in or permit others to engage in activities other than activities in performance of the work of this contract at any principal site of the work referred to in paragraph 1 above, without the approval of the Commission.

5. Request for Approval

Any request of the Contractor to the Commission for approval pursuant to either of paragraphs 3 or 4 above, shall specify the extent of such transfer or non-contract activities and should further specify the Contractor's proposed reduction in the allowance for use and occupancy set forth in paragraph 3 of Article IV, CONSIDERATION, and the Contractor's estimate of the reduction in other costs of this contract to the Government that would result should the Commission grant the requested approval. Any reduction in the allowance for use and occupancy agreed upon shall be set forth in an amendment to this contract.

ARTICLE III - TERM, EXPIRATION AND TERMINATION

1. The period of performance of the work under this contract shall commence on December 10, 1951 and, subject to the provisions of this Article, shall end on June 30, 1953.

2. Termination

a. For Default.

The Government may at any time terminate performance of the work under this contract for the default of the Contractor.

b. For the Convenience of the Government.

The Government, at its election, may for its convenience, (i) from time to time terminate in part performance of work under this contract, or (ii) at any time terminate in whole the performance of the work under this contract.

c. Notice of Termination.

Termination, under this paragraph, shall be effected by delivery to the Contractor of a written notice of termination, which notice (i) shall specify a date upon which said termination shall become effective, which date shall be at least sixty (60) days after the delivery of said notice; (ii) in the event of a termination in part, shall specify the portion or portions of the work so terminated and the period or periods during which said termination shall be effective; and (iii) shall specify whether said termination is for the default of the Contractor or for the convenience of the Government. Upon receipt of said notice of termination, the Contractor promptly, except as the notice may direct otherwise, shall (i) discontinue all terminated work as soon as is reasonably practicable, if the notice so directs, and in any event by the date specified in said notice of termination; (ii) cease all placing of orders for property or services in connection with the performance of the terminated work; (iii) proceed to the best of its ability to terminate all orders and subcontracts to the extent that they relate to the terminated work; (iv) assign to the Government in the manner and to the extent directed by the Commission, all the right, title and interest of the Contractor under the terminated portion of the orders and subcontracts so terminated; (v) settle, with the approval of the Commission, all subcontracts, obligations, commitments and claims related to the terminated work, the cost of which would be allowable in accordance with the provisions of this contract; (vi) continue performance of such part of the contract work, if any, as shall not have been terminated; and (vii) take such other action with respect to the terminated work as may be required under other Articles of this contract and, subject to the approval of the Commission, as may be otherwise appropriate, including but not limited to, action for the protection and preservation of Government property.

d. Entry by Government After Default.

- (i) If performance of the work under this contract is terminated for the default of the Contractor, the Government (1) may exercise the option granted in Article VI, OPTION IN THE GOVERNMENT, to purchase the principal site of the work hereunder; (2) may exercise the right given in item (ii) of this subparagraph.
- (ii) Instead of exercising the option to purchase referred to in (i) above, the Government may elect, pursuant to this subsection, to occupy the property for a period not to exceed one year by paying the Contractor a monthly charge in full satisfaction of all claims of the Contractor arising out of said entry and occupancy, including a claim for the fair rental value of said premises and facilities. Said monthly charge will be one-twelfth the yearly allowance for use and occupancy set forth in subparagraph j, of paragraph 3 of Article IV, CONSIDERATION.
- (iii) After termination for the default of the Contractor, and the exercise of either the option or right referred to in subparagraphs (i) and (ii) above, the Government may (a) enter upon and have exclusive occupancy of any principal site of the work described as such in paragraph 1 of Article II, SITE OF THE WORK; (b) take possession, for the period of such occupancy, of all materials, tools, machinery and appliances therein which may be owned by or are in the possession of the Contractor, (c) exercise during said occupancy all options, privileges and rights belonging to or exercisable by the Contractor in connection with such premises and facilities, and (d) complete or employ others to complete, the work of this contract therein. Said occupancy if done under (ii) above shall be for a period not to exceed one year.
- (iv) In addition, the Commission shall within the limits of its authority, indemnify and hold the Contractor harmless against any damages finally awarded in court actions or settlements made with the consent of the Commission, and against expenses incident to such court actions or settlements, where such actions and settlements are based on claims by third parties against the Contractor arising out of actions by the Government in use and occupancy of said premises and facilities pursuant to this subparagraph d.

e. Terms of Settlement.

Upon a termination of performance of all or part of the work under this contract, full and complete settlement of all claims of the Contractor with respect to the work of this contract so terminated shall be made as follows:

- (i) Assumption of Contractor's obligations. The Government may at the discretion of the Commission, assume and become liable for all obligations, commitments, and claims that the Contractor may have theretofore in good faith undertaken or incurred in connection with the terminated work, the cost of which would be allowable in accordance with the provisions of this contract; and the

Contractor shall, as a condition of receiving the payments mentioned in this Article, execute and deliver all such papers and take all such steps as the Commission may require for the purpose of fully vesting in the Government all the rights and benefits of the Contractor under such obligations or commitments.

- (ii) Payment for Allowable Costs. The Government shall reimburse the Contractor or allow credit for all allowable costs incurred in the performance of the terminated work and not previously reimbursed or otherwise discharged.
- (iii) Payment for Close-Out Expense. The Government shall reimburse the Contractor (a) for such close-out expenses, (b) for such further expenditures as are made after the date of termination for the protection of the Government property, and (c) for such legal and accounting services in connection with settlement, as are required or approved by the Commission.
- (iv) Payment on Account of the Fixed Fee.
 - a. If the performance of the work under this contract is terminated in whole for the default of the Contractor, no further payment on account of the fixed fee set forth in subparagraph a, of paragraph 1 of Article IV, CONSIDERATION, shall be made.
 - b. If the performance of the work under this contract is terminated in whole for the convenience of the Government, the Contractor shall be paid that portion of the fixed fee which the work actually completed, as determined by the Commission, bears to the entire work under this contract less payments previously made on account of the fee.
 - c. If the performance of the work under this contract is terminated in part for the convenience of the Government, the Contractor and the Commission shall promptly negotiate to agree upon an equitable adjustment of the fixed fee set forth in subparagraph a, of paragraph 1 of Article IV, CONSIDERATION, and the agreement reached shall be evidenced by a written, executed supplemental agreement to this contract. If the Contractor and the Commission fail to so agree upon such fee adjustment, within a reasonable time after such partial termination, the failure to agree shall be disposed of in accordance with Article XIV, DISPUTES, hereof.

3. Expiration. In the event of expiration of the period of work performance hereunder without prior termination hereof, the Contractor shall (i) discontinue the contract work at the end of the day of expiration and (ii) take such other action as may be required under other provisions of this contract and, subject to the approval or ratification of the Commission, as may be otherwise appropriate, including but not limited to, action for the protection and preservation of Government property.

4. Claims in Favor of the Government. The obligation of the Government to make any of the payments required by this Article shall be subject to any unsettled claims in connection with this contract which the Government may have against the Contractor. Nothing contained in this Article shall be construed to limit or affect any other remedies which the Government may have as a result of a default by the Contractor.

5. Settlement upon Termination or Expiration. Any other provisions of this contract to the contrary notwithstanding, the Contractor and the Commission may agree upon the whole or any part of the amount or amounts which the Contractor is to receive upon and in connection with (i) any termination pursuant to this Article or (ii) expiration of the term of this contract without prior termination thereof. Any agreement so reached shall be evidenced by a written supplemental agreement to this contract which shall be final and binding upon the parties with regard to their respective claims against each other except as therein otherwise expressly provided.

ARTICLE IV - CONSIDERATION

1. Compensation for Contractor's Services.

As full consideration for the performance by the Contractor of the work of this contract (including (i) profit on all items and for all work, and (ii) reimbursement for all costs and expenses listed hereunder as unallowable costs or otherwise not allowable under the terms of this contract) the Contractor shall receive from the Government:

- a. A fixed fee of One Hundred Twenty Thousand Dollars (\$120,000.00).
- b. Payment for allowable costs as hereinafter provided.

2. Basis for Determination of Allowable Costs.

The costs allowable under this contract shall be costs and expenses which are actually incurred by the Contractor in performing the work under this contract and which are necessary or incident to that performance. Allowable costs shall include, without limitation on the generality of the foregoing, the items described as allowable in paragraph 3 of this Article but shall not in any event include the items described as

unallowable in paragraph 4 of this Article except to the extent indicated therein. Failure to mention any item of cost in this Article is not intended to imply that it is either allowable or unallowable.

3. Examples of Allowable Costs.

The following are examples of items, the cost of which is allowable under this contract to the extent indicated:

a. Bonds and insurance, including self-insurance, approved by the Commission, the cost of which is not excluded by other provisions of this contract.

b. Transportation and communication, including (i) reconsignment, switching, demurrage and diversion charges, (ii) loading, unloading, storage, crating and packing charges, (iii) local and long distance telephone charges, facsimile and teletype messages, telegrams, cablegrams, radiograms, postage, post office box rental, messenger charges and delivery services.

c. Materials, supplies, tools, machinery, equipment, fuel and utilities, including the cost of processing and testing thereof by others and inspection, expediting, storage, salvage and other usual expenses incident to the procurement and use thereof, subject to the approvals required under any other provisions of this contract.

- (i) The Contractor may use in its performance of the work of this contract, items manufactured by it in the ordinary course of its commercial business, provided that the Commission grants approval to each such use and provided further that the Commission and the Contractor shall have agreed, prior to any such approval, in writing but not necessarily by execution of an amendment to this contract, upon a unit price or prices for such items. The unit price or prices so agreed upon may include profit.
- (ii) The Contractor may withdraw from its general stores and use in its performance of the work of this contract items purchased by it before or during the period of performance of this contract for its general stores, provided that such withdrawal and use of said items shall be in accordance with the Contractor's statements of its daily procurement practices and procedures submitted to the Commission and approved by the Commission pursuant to subparagraph b of paragraph 1 of Article II, PROCUREMENT AND SUBCONTRACTS. The cost of any such item shall be determined in accordance with last-in, first-out inventory accounting principles.

(iii) The Commission shall have the right to inspect any item provided by the Contractor for the work of this contract pursuant to sub-subparagraphs (i) and (ii) above and to reject any or all of such items which the Commission determines to be defective, in which event there shall be no cost to the Government on account of such rejected items and the Contractor shall at its own non-allowable cost and expense, remove all such rejected items from any site of the work to which they may have been delivered. The failure of the Government to inspect and reject any such item prior to its use by the Contractor in the work of this contract in accordance with the provisions of sub-subparagraphs (i) and (ii) above shall be deemed inspection and acceptance thereof, except as to latent defects, fraud and such gross negligence as constitutes fraud.

d. Patents, purchased designs and royalty payments, to the extent approved by the Commission.

e. Expert technical or professional assistance to the extent allowed by Article XXII, TECHNICAL AND PROFESSIONAL ASSISTANCE.

f. Taxes, fees and charges, levied by public authorities, which the Contractor is required by law to pay, except those which are imposed upon or arise by reason of or are measured by the Contractor's fee or which are excluded pursuant to other provisions of this contract. This item shall include interest costs and penalties incurred by the Contractor in compliance with Article XX, STATE AND LOCAL TAXES AND FEES, hereof.

g. In accordance with Appendix "A", or modifications thereto, labor (whether as wages, salaries, benefits, or other compensation, as prescribed by the Contractor's employment and employee welfare policies), recruiting of personnel, (including "help wanted" advertising), travel (including subsistence during travel), and the transportation of personnel and their household goods and effects. In case the full time of an employee of the Contractor is not applied to the work of this contract, the cost of his labor shall be included in this item only in proportion to the actual time so employed.

h. Expenses of litigation, including reasonable counsel fees, incurred in accordance with the provisions of this contract, and such other legal, accounting, and consulting fees as are approved by the Commission.

i. Alterations, additions, improvements and repairs to, and remodeling, reconstruction and ordinary maintenance of, facilities employed by the Contractor in performing the work of this contract, in accordance with Article XI, CONSTRUCTION, ALTERATION, AND REPAIR.

j. An allowance of Forty-One Thousand Seven Hundred Eighty Dollars (\$41,780.00) for the period from March 1, 1952 to December 31, 1952,

and Fifty-Three Thousand Six Hundred Dollars (\$53,600.00) per year during the period thereafter of the Contractor's performance of the work of this contract at the Hicksville plant of the Contractor, prorated over said period. Said allowance is in lieu of any charge by the Contractor for the use and occupancy of said plant and is in lieu of costs and expenses actually incurred by the Contractor during said period for the following:

- (i) Depreciation of buildings on the Hicksville site of the work hereunder.
- (ii) Real estate taxes, including, among others, school, water, and sewage taxes and special assessments, on the land and buildings at said Hicksville site.
- (iii) Premiums for fire, smoke, storm, and hail insurance, and similar property insurance policies on the Contractor's Hicksville plant and on all property of the Contractor therein.
- (iv) Premiums for public liability insurance against damages to persons and properties of employees of the Contractor (except but not for Workmen's Compensation insurance) or of third persons, at the Contractor's Hicksville plant or resulting from the Contractor's operations therein.
- (v) Premiums for insurance against damages to motor vehicles, not Government-owned, used by the Contractor in connection with the work of this contract and against damages to persons and property resulting from operation by the Contractor and its employees of motor vehicles in connection with the work of this contract.

In the event the Hicksville plant is totally or partially made unusable for the performance of the work of this contract as a result of fire, explosion or other casualty, the Commission and the Contractor shall negotiate to agree upon an equitable downward adjustment of the allowance set forth in this subparagraph j. If the Commission and the Contractor fail to agree upon such adjustment within a reasonable time after such casualty, the failure to agree shall be disposed of in accordance with Article XIV, DISPUTES.

k. An allowance (in lieu of direct reimbursement) to cover the general and administrative expenses incurred by the Contractor's corporate office in New York City allocable to the work of this contract. The amount of this allowance shall be computed as a percentage, otherwise referred to herein as the G and A rate, of the costs of operation hereunder. For the purposes of this subparagraph costs of operation are defined as the costs, without duplication, incurred by the Contractor and allowable pursuant to subparagraphs a, b, c, e, g, l, n and o of this paragraph 3 but excluding costs of capital items of machinery and equipment procured for the work of this contract and including the costs of ordinary repairs and maintenance to any site of the work defined as a principle site of the work by Article II, SITE OF THE WORK.

- (i) A provisional G and A rate of three (3%) percent, subject to review and retroactive adjustment, is agreed upon at the commencement of this contract and the Government's

payments to the Contractor shall be based initially upon said provisional rate. As soon after each June 30th during the term of this contract (or as soon after any intervening date of termination or expiration thereof) as is practicable, the Commission in consultation with the Contractor, shall review the actual expense to, and obligation incurred by, the Contractor during the contract period from the close of the previous period reviewed (or the date of commencement of the contract if there has been no previous period reviewed) to said June 30th (or intervening date of termination or expiration) attributable to the elements of costs covered by this allowance. Based upon such review, the Commission and the Contractor shall negotiate and agree upon a fixed rate for the period reviewed. Said fixed rate shall retroactively replace the provisional rate hitherto in effect for the period reviewed. Said fixed rate, or any other rate which the Commission and the Contractor may agree upon at said negotiation, shall, as a new provisional rate, (i) retroactively replace the provisional rate hitherto in effect from the close of the contract period reviewed to the date of agreement on said new rate, and (ii) prospectively be the new provisional rate until it is in turn replaced pursuant to the foregoing by a new provisional or fixed rate. In the event that a provisional rate is replaced by a lower or higher fixed or provisional rate, suitable retroactive adjustments in the payments shall be made promptly. Failure to agree upon a fixed rate pursuant to the foregoing shall be considered a dispute to be settled in accordance with the provisions of Article XIV, DISPUTES, hereof.

l. Costs of providing cafeteria, restaurant, or food commissary services to employees of the Contractor directly engaged in the performance of the work hereunder.

m. Expenses of moving and transporting the Contractor's and Government's property from any principal site of the work, as defined in paragraph 1 of Article II hereof, to any other site for the work, provided that the Commission orders or approves in advance the move, the new site and the method of transportation.

n. Close-out costs incurred by the Contractor after the expiration or termination of the period of performance of the work of this contract.

o. The cost to the Contractor of compliance with health and safety, security and property management standards and regulations of the Commission.

p. Losses and expenses, including losses and expenses resulting from claims of patent infringement, not compensated for by insurance or otherwise (including settlements made with the consent of the Commission),

sustained by the Contractor in the performance of the work and certified in writing by the Commission to be just and reasonable, except losses and expenses expressly made unallowable under other provisions of this contract.

q. An allowance of Sixteen Thousand Six Hundred Dollars (\$16,600.00) for the procurement and accounting services performed by the Contractor's Central Engineering Department 50 Staff from the commencement of the term of this contract to June 30, 1952 in Contractor facilities other than the Contractor's Hicksville, Long Island Plant.

r. The direct cost to the Contractor of work performed under this contract with the approval of the Commission at the Bayside, Long Island, plant of the Contractor, plus indirect costs allocable to such work to the extent such indirect costs are agreed upon by the Commission and the Contractor.

s. Items of cost which are not expressly excluded by other provisions of this contract and which are specifically certified in writing by the Commission as allowable costs hereunder.

4. Example of Unallowable Costs: The following are examples of items, the cost of which is not allowable except as indicated:

a. Advertising, except "help-wanted" advertising or other advertising to the extent such other advertising is specifically authorized by the Commission.

b. Central and branch office expenses of the Contractor, except expenses of any principal site of the work described as such in paragraph 1 of Article II, SITE OF THE WORK, and except as expressly provided for elsewhere in this contract.

c. Commissions and bonuses (under whatever name) in connection with obtaining or negotiating for a Government contract.

d. Unless otherwise authorized by the Commission, costs of the character described in subdivision g. under examples of allowable costs, which are not in accordance with Appendix "A", or modifications thereto.

e. Provisions for contingent reserves.

f. Contributions, donations, dividend payments, interest on borrowings (however represented), bond discounts and expense and financial charges.

g. Entertainment expenses, except as provided in Appendix "A", or modifications thereto.

h. Fines and penalties, unless incurred as a result of action by the Contractor in accordance with the express direction of the Commission or in accordance with the provisions of Article XX, STATE AND LOCAL TAXES AND FEES.

i. Capital additions and structural improvements to Contractor-owned or Contractor-leased facilities, except where such additions or improvements have been specifically approved by the Commission as being an aid to the performance of this contract, and only to the extent specifically agreed to by the Commission.

j. Losses from sales and exchanges of the Contractor's capital assets and losses on other contracts.

k. Membership in trade, business and professional organizations, except as specifically authorized by the Commission.

l. Subscriptions to periodicals or other publications, technical or otherwise, except as specifically authorized by the Commission.

m. Pensions, retirement, group health, accident and life insurance plans, except to the extent authorized under Appendix "A", or modifications thereto.

n. Storage of contract records after completion of contract operations, irrespective of contractual or statutory requirements regarding preservation of records, except as specifically allowed pursuant to paragraph 3 of Article VIII, hereof.

o. Taxes, fees and charges, levied by public agencies, which are imposed upon or arise by reason of or are measured by the Contractor's fixed fee.

p. Government-furnished property, except to the extent that cash payment therefor is required pursuant to procedures of the Commission applicable to transfers of such property to the Contractor from others (including other agencies of the Government) and the cost of insurance against loss, destruction or damage to Government-owned property.

q. Wages, salaries, or other compensation of the Contractor's corporate officers, except to the extent such wages, salaries or other compensation (including travel and subsistence) is paid (without duplication) pursuant to subparagraphs g. and k. of paragraph 2 of this Article.

r. Other items made unallowable by the provisions of this contract.

5. Payment:

a. Payment of the Fixed Fee. Payment of ninety (90%) per cent of the fixed fee set forth in subparagraph a. of paragraph 1 of this Article shall be made by the Government monthly in amounts based on the percentage of the completion of the work hereunder, as determined from estimates submitted to and approved by the Commission.

b. The Government will make reimbursement payments for the allowable costs set forth in paragraph 3 of this Article monthly, or in the discretion of the Commission, at more frequent intervals.

c. Upon (i) the expiration of the period of performance of the work of the contract, (ii) completion of the work required by paragraph 3 of Article III, TERM, TERMINATION AND EXPIRATION, and (iii) the furnishing by the Contractor of a release in such form and with such exception as may be approved by the Commission of all claims against the Government under or arising out of this contract, accompanied by any accounting for Government-owned property required by Article V, GOVERNMENT PROPERTY, the Government shall promptly pay to the Contractor the unpaid balance of the consideration set forth in paragraph 1 of this Article (including any portion of the fixed fee withheld or not yet paid pursuant to subparagraph a, above) less deductions due under the terms of this contract and any sum required to settle any unsettled claim which the Government may have against the Contractor.

d. Claims for Payment. Claims for payment shall be accompanied by such supporting documents and justifications as the Commission shall prescribe.

e. Discounts. The Contractor shall take and afford the Government advantage of all available cash and trade discounts, rebates, allowances, credits, salvage, commissions and bonifications.

f. Revenues. Any revenues, apart from the fixed fee, accruing to the Contractor in connection with the work under this contract, shall be applied in reduction of allowable costs under this contract.

g. Direct Payment of Charges - Deductions. The Government reserves the right, upon ten (10) days written notice from the Commission to the Contractor, to pay directly to the persons concerned any charges for services, materials or freight which otherwise would be allowable under this contract. Any payment so made shall discharge the Government of all liability to the Contractor therefor.

6. Limit of Government Liability.

a. Estimates. The initially estimated cost of the work under this contract, including the fixed fee set forth in subparagraph a of paragraph 1 of this Article, is Three Million Two Hundred Fifty-Three Thousand Eight Hundred Ninety-Seven Dollars (\$3,253,897.00). It is understood that neither the Government nor the Contractor guarantees the correctness of the initial estimate of cost or any revision thereof, and that there shall be no adjustment in the amount of the Contractor's fixed fee by reason of any errors in the computation of estimated costs or revised estimated costs, or any difference between any estimated cost or revisions thereof and the actual cost of the work.

b. Obligations. The Commission has initially obligated for this contract, from obligational authority available to it, the sum of Three Million Two Hundred Fifty-Three Thousand Eight Hundred Ninety-Seven Dollars (\$3,253,897.00). Said amount may be increased by the Commission in its discretion, from time to time. The Contractor promptly shall notify the Commission in writing whenever it believes that the then Commission obligation for this contract is insufficient, and its notice shall contain its estimate of the amount of such insufficiency. When and if the total of amounts paid and payable to the Contractor under this contract (including the fixed fee and the actual or estimated amounts unpaid by the Contractor on all subcontracts and all other commitments on the assumption that they will be completed), shall equal the then Commission obligation for this contract, the Contractor shall not be expected to incur further expenses nor to perform further hereunder unless the Commission agrees in writing to increase said obligation for this contract in an amount sufficient to cover additional work hereunder. Notwithstanding any other provisions of this contract the liability of the Government under this contract shall be limited to the Commission obligation specified in this subparagraph, as same may be increased by the Commission by notice to the Contractor in writing.

ARTICLE V - GOVERNMENT PROPERTY

1. Except as otherwise specifically agreed upon in writing by the Contractor and the Commission and except as otherwise specifically provided herein

a. title to all property specially purchased by the Contractor for this contract, for which the Contractor is entitled to direct reimbursement under the provisions of paragraphs 2 and 3 of Article IV, CONSIDERATION, shall pass directly from the vendor to the Government; and

b. title to all property utilized in the work of this contract, provided by the Contractor from Contractor-owned stores or manufactured by the Contractor in the ordinary course of its commercial business, for which the Contractor is entitled to reimbursement under the provisions of paragraphs 2 and 3 of Article IV, CONSIDERATION, shall pass to the Government at the time of such utilization.

2. The Government reserves the right to furnish any property or services required for or useful in the performance of the work under this contract. Title to all property so furnished shall remain in the Government.

3. The Government shall retain title to all products, by-products, wastage, salvage, work-in-process, residues and scrap resulting from property to which the Government has or had title pursuant to paragraphs 1 and 2 above.

4. All items of Government-owned property referred to above are hereafter collectively referred to in this Article as "Government property". To the extent practicable, the Contractor shall cause all non-expendable items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain, at all times and in a manner satisfactory to the Commission, records showing the disposition and use of Government property. Such records shall be subject to Commission inspection at all reasonable times. It is understood that the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located.

5. The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property (but not of any consumption of materials or supplies in the performance of its undertakings hereunder). Except as otherwise specifically provided in this contract, the Contractor shall not be liable for loss or destruction of or damage to Government property (in the possession or custody of the Contractor in connection with this contract) unless such loss, destruction or damage is due to gross negligence or wilful misconduct attributable to the Contractor or its supervisory employees.

6. Items of Government property referred to above shall not be used by the Contractor except in the performance of its obligations under this contract.

7. In the event of loss or destruction of or damage to Government property, the Contractor shall take such steps to subserve the Government's interest as the Commission authorizes or approves. If the Contractor is

liable for loss or destruction of or damage to any items of Government property, it shall promptly account therefor to the satisfaction of the Commission; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction or damage (other than by the Government under this contract), the Contractor shall promptly account to the Government for an equitable share of such indemnification, reimbursement, or other compensation; in any event, the Contractor shall do nothing to prejudice the Government's rights to recover against third parties for any such loss, destruction or damage, and, upon request of the Commission, shall furnish the Government all reasonable assistance and cooperation (including the prosecution of suit and the execution of instruments of assignment in favor of the Government) in obtaining recovery.

8. The Contractor may, with the approval of the Commission, (i) transfer or otherwise dispose of items of Government property to such parties and upon such terms and conditions as so approved, or (ii) itself acquire title to items of property at prices mutually agreed upon by the Commission and the Contractor without the necessity of execution of an amendment to this contract. The proceeds of any such transfer or disposition, and the agreed price of any such Contractor acquisition, shall be applied in reduction of any payments or reimbursement to be made by the Government to the Contractor under this contract or shall otherwise be paid in such manner as the Commission may direct.

9. The Contractor shall conform to all regulations and requirements of the Commission concerning the management, inventory control, storing and disposal of Government property. The Contractor agrees to prepare and submit to the Commission for review, within sixty (60) days after the execution of this contract, a written statement of the methods to be used and of the procedures to be followed by the Contractor in regard to management, inventory control, storing and disposal of Government property. The Contractor shall not use any method or procedure in this regard which the Commission has advised the Contractor is contrary to Commission policy or which is otherwise prohibited by this contract.

10. With respect to each item of Government property located at the Contractor's Hicksville, Long Island plant, not sold or otherwise disposed of by the Contractor or acquired by the Contractor pursuant to paragraph 8 above, the Government, within one hundred twenty days following the termination or expiration of the period of performance of this contract or any extensions thereof, if it has not exercised the option to purchase said plant as provided in Article VI, OPTION IN THE GOVERNMENT, shall abandon or remove it.

(a) In the event the Government occupies said plant pursuant to subparagraph d (ii) of paragraph 1 of Article III, TERM, TERMINATION AND EXPIRATION, the rights in the Government to abandon or remove set forth in this paragraph shall be suspended during the period of such occupancy and the one hundred twenty day period during which the Government must either abandon or remove such property shall not commence to run until the end of such occupancy.

(b) Prior to determination by the Government to abandon or remove said item the Contractor agrees, if the Government so requests, to negotiate with the Government in good faith to purchase said item at a price mutually agreed upon, it being understood, however, that the Contractor shall not be required to negotiate any price in excess of the value to the Contractor of said item.

(c) In the event the Government removes any such item of Government property which is structurally incorporated in a building on the Hicksville site, either directly or by means of its foundations, accessory piping or instrumentation, the Government shall restore the pertinent portion of the Contractor's structure to substantially the condition immediately prior to the incorporation therein of the item of property except for reasonable wear and tear and except for damage by fire, explosion or other casualty. The Government agrees that in the event the Contractor requests, in lieu of such restoration, restoration to a condition other than that set forth in the preceding sentence, to restore in accordance with the Contractor's request if the Commission determines such alternative restoration will be in the interests of the Government.

(d) There shall be no charge to the Government by the Contractor for the storage of such property (i) for any period during which the Government may exercise the option set forth in Article VI hereof, (ii) for any period during which the Government may elect, in accordance with this paragraph, to abandon or remove such property, or (iii) during the period of the close-out of this contract.

ARTICLE VI - OPTION IN THE GOVERNMENT

As part of the consideration for this contract the Government hereby is granted the option set forth in the following paragraph. This option may be exercised by the Government, by written notice to the Contractor of such exercise, at any time up to one hundred Twenty (120) days after the expiration or termination of this contract and, in the event of occupancy by the Government pursuant to subparagraph d(ii) of paragraph 2 of Article III, TERM, EXPIRATION AND TERMINATION, at any time during said occupancy.

The Government may, if it so elects, purchase, and the Contractor shall, if requested to do so by the Government, sell to the Government, (i) the land and buildings owned by the Contractor, as of the date of execution of this contract by the Contractor at Hicksville in the Township of Oyster Bay, New York, and all additions and improvements to said buildings and land subsequently acquired by the Contractor. In the event of purchase pursuant to the preceding sentence, the Government shall pay the Contractor the purchase price paid by the Contractor for said buildings and land plus the cost of acquiring said additions and improvements less, without duplication, any costs of acquiring said additions and improvements for which the Contractor is reimbursed otherwise under this contract and the depreciation of said buildings, additions and improvements. For the purposes of this paragraph, the purchase price of said land and buildings includes closing costs, and costs of necessary building and use permits and variances, to the extent that the Contractor is not reimbursed otherwise for such costs under this contract. Depreciation for the purposes of this paragraph is defined as the depreciation allowed or allowable to the Contractor for tax purposes in accordance with Internal Revenue Code Section 23(1).

ARTICLE VII - PATENTS

1. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title and rights under any application or patent that may result; provided, however, that the Contractor, in any event, shall retain at least a non-exclusive, irrevocable, royalty-free license under said invention,

discovery, application, or patent, such license being limited to the manufacture, use, and sale for purposes other than use in the production or utilization of fissionable material or atomic energy. Subject to the license retained by the Contractor, as provided in this Article, the judgment of the Commission on these matters shall be accepted as final; and the Contractor for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

2. No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery or process conceived in the course of any of the work under this contract.

3. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs 1 and 2 of this Article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

4. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making this Article applicable to the subcontractor and its employees.

5. The Contractor shall grant to the Government, to practise or have practised, an irrevocable, non-exclusive license in and to any inventions (whether patented or not), secret processes, technical information and techniques of production, research and plant operation, which are directly utilized by the Contractor in the performance of the work of this contract. Such license shall apply to the manufacture, use and disposition of any article and material and to the use of any method or process. Such license shall be limited to governmental purposes related to (i) production of fissionable material, (ii) utilization of fissionable material, and (iii) utilization of atomic energy, provided, however, that the foregoing shall not limit the Government's right to sell, or cause to be sold, all products or by-products not used by or for the Government which result or remain from the use of any invention, process, information or technique to which such license applies.

ARTICLE VIII - RECORDS AND ACCOUNTS

1. The Contractor shall keep and maintain a separate and distinct set of records and books of account together with all related memoranda, supporting documents and correspondence, showing all allowable costs incurred, revenues earned, fixed fee accruals and the use and disposition of all Government-owned property coming into the possession of the Contractor under this contract. The Contractor shall accurately record its financial transactions hereunder in said records and books of account. The system of accounts employed by the Contractor shall be in accordance with generally accepted accounting principles and subject to the approval of the Commission.

2. Except to the extent, if any, otherwise approved by the Commission, all records, books of account, memoranda, supporting documents and correspondence referred to in paragraph 1 above

(i) shall be the property of the Government

(ii) shall be kept and maintained at the principal site of the work referred to in paragraph 1 of Article II, SITE OF THE WORK;

(iii) shall be subject to audit and inspection by the Commission at all reasonable times and the Contractor shall afford the Commission proper facilities for such inspection and audit; and

(iv) shall be delivered to the Government or otherwise disposed of by the Contractor either as the Commission may from time to time direct during the progress of the work or in any event as the Commission shall determine upon completion or termination of this contract and final audit of all accounts hereunder.

3. All records in the possession of the Contractor related to this contract, except those referred to in paragraph 1 above, and in Article XVI, SCIENTIFIC AND TECHNICAL DATA, shall be preserved by the Contractor without additional compensation therefor, for a period of five (5) years after final settlement of the contract or otherwise disposed of in such manner as may be agreed upon by the Government and the Contractor. The Government shall at all reasonable times have the right to examine, make copies of, and borrow said records, at no cost to the Government; provided, however, that

except as otherwise agreed upon by the Government and the Contractor all such records which bear a security classification at the time of completion or termination of the work set forth in Article I, SCOPE OF THE WORK, or at the time of the expiration of this contract, shall become the property of the Government at such time and shall thereafter be delivered to the Government or otherwise disposed of by the Contractor as the Commission shall determine and provided further that neither this paragraph nor any other provision of this contract shall be deemed to require the Contractor at its unallowable cost to store or preserve records which bear a security classification.

ARTICLE IX - PROCUREMENT AND SUBCONTRACTS

1. Approvals

a. The Contractor shall not enter into any subcontract without the written approval of the Commission of its terms and conditions. For the purposes of this paragraph, a subcontract is defined as any contractual arrangement (whether or not in the form commonly referred to as a "purchase order") with a third party for the performance of a specific part of the work to be performed under this contract, which arrangement is specifically made for such performance and the cost of which is, apart from the provisions of this paragraph, an allowable cost under this contract, except, however, arrangements covering (i) the furnishing of a basic raw material, (ii) the furnishing of a standard commercial or catalog item, or (iii) the employer-employee relation.

b. The Commission reserves the right, from time to time, by written notice from the Commission to the Contractor (i) to make any or all other commitments or classes of commitments hereunder (other than the contractual arrangements referred to in a. above) subject to, and to require their submission for, Commission approval, and (ii) to make any or all methods, practices, and procedures used or proposed to be used in effecting all arrangements and commitments hereunder subject to, and to require their submission for, Commission approval. In this regard, the Contractor agrees to prepare and submit to the Commission for review, within thirty (30) days after the execution of this contract (or any extension thereof approved in writing by the Commission), written statements of the daily procurement practices and procedures to be used and of the objectives intended to be accomplished by such practices and procedures. The Contractor will not use any procurement procedures prohibited by this contract or which the Commission has advised the Contractor are contrary to Commission policy.

c. The Contractor shall obtain the prior written approval of the Commission before (i) purchasing motor vehicles, airplanes, typewriters, printing equipment, helium or alcohol, (ii) leasing, purchasing, or otherwise acquiring real property, (iii) procuring any item or service on a cost, cost-plus-fee or 'time and materials' basis, (iv) purchasing any item which the Commission specifies is to be obtained from indicated Government sources, and (v) purchasing any item at a cost in excess of \$2,000.00, where payment for the cost of any action specified in (i) through (v) will be claimed hereunder.

2. Writing; Terms: The Contractor shall reduce to writing, unless this provision is waived in writing by the Commission, every subcontract or other commitment in excess of One Hundred Dollars (\$100.00) made by it for the purpose of its undertakings hereunder, except contracts covering the employer-employee relation (but not excepting contracts with consultants); insert therein a provision that such commitment is assignable to the Government; insert therein all other provisions required by law or expressly required by the provisions of this contract; and make all such commitments in its own name and not bind or purport to bind the Government or the Commission thereunder.

3. Procurement from Government Sources: From time to time, by separate instrument or instruments, the Contractor may be duly authorized to act as agent for and on behalf of the Government or the Commission respecting (i) the making of procurements in and for performance under this contract from so-called Government sources such as Federal Supply Schedule commercial sources, Armed Services Petroleum Purchasing Agency, Federal Prison Industries, Inc. and Federal Supply Service, and (ii) the issuing of tax exemption certificates pertinent to such procurements. The action so authorized shall be deemed to be within the scope of the Contractor's allowable cost of work performance under this contract.

ARTICLE X - CONDUCT OF THE WORK, INSPECTION AND REPORTS

1. In performing the work called for under this contract, the Contractor

- (i) shall utilize its best efforts, know-how and ability;
- (ii) shall utilize its best efforts to have the work executed in the most workmanlike manner by qualified, careful and efficient workers in strict conformity with the best standard practices (subject to the directions of the Commission);
- (iii) shall utilize its best efforts to (provide sufficient technical, supervisory, administrative and other personnel to insure the prosecution of the work in accordance with pertinent production or other progress schedules;

(iv) shall, if in the opinion of the Commission the Contractor falls behind any pertinent production or other progress schedule, use its best efforts to take such steps to improve its progress as the Commission may direct; and

(v) shall, if in the opinion of the Commission, the Contractor's personnel or other reimbursable costs are excessive for the proper performance of this contract, make such prospective reductions thereof as the Commission may direct.

2. The work of this contract is subject to (i) the general supervision of the Commission, and (ii) the Commission authorizations, approvals and directions otherwise provided for in this contract. The Contractor shall proceed in the performance of this contract and shall place emphasis (or relative emphasis) on the various phases of the work of said contract, as and to the extent requested by the Commission from time to time. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate, all activities of the Contractor in, or related to the course of the work under this contract.

3. The Contractor shall keep the Commission fully advised of its progress hereunder and of the difficulties, if any, which it experiences and shall prepare and submit to the Commission, in such quantity and form as may be directed by the Commission

(i) monthly progress reports,

(ii) interim technical reports on completion of specific phases of the work,

(iii) production schedules, financial and cost reports, construction completion reports and such other special reports as may be requested by the Commission from time to time, and

(iv) a final report summarizing its activities, findings, and conclusions.

4. The Contractor shall appoint from its staff an over-all director of the work of this contract. The selection and continued assignment to said work of this director shall be subject to the approval of the Commission.

ARTICLE XI - CONSTRUCTION, ALTERATION OR REPAIR WORK

1. The Contractor shall not perform or have performed under this contract any construction, alteration or repair work in excess of One Thousand Dollars (\$1,000.00), including painting and decorating, without the prior written approval of the Commission.

2. In the event that the Contractor, under this contract, performs or has performed, construction, alteration or repair work, including painting and decorating, which work is within the scope of the Davis-Bacon Act (Act of March 3, 1931, c.411, Sec. 1, 46 Stat. 1494, as amended; 40 U. S. Code 276 (a) et seq.), the following provisions shall apply to such work:

a. All mechanics and laborers employed or working upon the site of the work, or under the Housing Act of 1949 in the construction or development of the project, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Anti-Kickback Regulations (29 C.F.R. Part 3)), the full amounts due at the time of payment computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor, to be furnished to the Contractor by the Commission and which will be attached to Appendix "A" and made a part thereof, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and such laborers and mechanics; and the wage determination shall be posted by the Contractor at the site of the work in a prominent place where it can be easily seen by the workers.

b. The Commission may withhold or cause to be withheld from the Contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics employed by the Contractor or any subcontractor on the work the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic employed or working on the site of the work or under the Housing Act of 1949 in the construction or development of the project, all or part of the wages required by the contract, the Commission may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

c. (1) Payroll records will be maintained during the course of the work and preserved for a period of three (3) years thereafter for all laborers and mechanics working at the site of the work, or under the Housing Act of 1949 in the construction or development of the project. Such records will contain the name and address of each such employee, his correct classification, rate of pay, daily and weekly number of hours worked, deductions made and actual wages paid.

(c) The Contractor will submit weekly a certified copy of all payrolls to the United States Atomic Energy Commission if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit the certified payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Commission. The certification will affirm that the payrolls are correct and complete, that the wage rates contained therein are not less than those determined by the Secretary of Labor and that the classifications set forth for each laborer or mechanic conform with the work he performed. The Contractor will make his employment records available for inspection by authorized representatives of the Commission and the Department of Labor, and will permit such representatives to interview employees during working hours on the job.

d. Apprentices will be permitted to work only under a bona fide apprenticeship program registered with a State Apprenticeship Council which is recognized by the Federal Committee (on Apprenticeship, U. S. Department of Labor;) or if no such recognized Council exists in a State, under a program registered with the Bureau of Apprenticeship, U. S. Department of Labor.

e. The Contractor will comply with the regulations of the Secretary of Labor made pursuant to the Anti-Kickback Act of June 13, 1934, 48 Stat. 948; 62 Stat. 740; 63 Stat. 108; 18 U.S.C. 874, 40 U.S.C. 276 b, c, and any amendments or modifications thereof, will cause appropriate provisions to be inserted in subcontracts to insure compliance therewith by all subcontractors subject thereto, and will be responsible for the submission of affidavits required of subcontractors thereunder, except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances and exemptions from the requirements thereof.

f. The Contractor will insert in each of its subcontracts the provisions set forth in stipulations (a), (b), (c), (d), (e) and (g) hereof, and such other stipulations as the Commission may by appropriate instructions require.

g. A Breach of stipulations (a) through (f) may be grounds for termination of the contract.

ARTICLE XIII - EIGHT-HOUR LAW

No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this paragraph of the contract. The wages of every laborer or mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight hours per day and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For

each violation of the requirements of this paragraph of the contract a penalty of five dollars shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this paragraph of the contract, and all penalties thus imposed shall be withheld for the use and benefit of the Government. Provided, That this stipulation shall be subject in all respects to the exceptions and provisions of the Eight-Hour Laws as set forth in U. S. Code, Title 40, Sections 321, 324, 325, 325a, and 326, which relate to hours of labor and compensation for overtime.

ARTICLE XIII - DISCLOSURE OF INFORMATION

1. It is understood that unauthorized disclosure of any, or failure to safeguard all, material marked as "Security Information" that may come to the Contractor, or any person under its control, in connection with the work under this contract may subject the Contractor, its agents, and employees to criminal liability under the laws of the United States. See the Atomic Energy Act of 1946, 60 Stat. 755, as amended, Title 42, United States Code, Sec. 1801, et. seq. See also Title 18, United States Code, Secs. 791 to 798, both inclusive, and Executive Order No. 10,104, February 1, 1950, 15 F. R. 597.

2. The Contractor agrees to conform to all security regulations and requirements of the Commission. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1946, as amended, the Contractor shall not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual, and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense and security. As used in this paragraph the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended by the Act of April 5, 1952, Public Law 298, 82nd Congress, 66 Stat. 43. The term "restricted data" as used in this paragraph means all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security.

3. Except as otherwise authorized in writing by the Commission, the Contractor shall insert in all agreements, made pursuant to the provisions of this contract which may involve security information, the provisions of paragraphs 1 and 2 of this Article.

ARTICLE XIV - DISPUTES

Except as otherwise specifically provided in this contract, all disputes between the parties which may arise under, or in connection with, any part of this contract, prior to final payment, and which are not disposed of by mutual agreement, shall be decided by a representative of the Commission, duly authorized to supervise and administer performance of the undertakings hereunder, who shall reduce his decision to writing and mail a copy of said decision to the Contractor; said decision shall be final and conclusive on the parties hereto, subject to the right of the Contractor to appeal, as provided for in the sentence next following. Within thirty days from the mailing of said decision, the Contractor may appeal, in writing, to the Commission, whose written decision thereon, or that of its duly authorized representative, representatives, or Board (but not including the Commission representative mentioned in the first sentence of this Article), duly authorized to determine such an appeal, shall be final and conclusive on the parties hereto. If any such dispute arises during performance by the Contractor of its undertakings hereunder, the Contractor shall diligently proceed with the performance of its undertakings under this contract, pending the decision of such dispute.

ARTICLE XV - SECURITY ACTION

Upon notice from the Commission that such action is considered to be in the interests of the common defense and security, the Contractor shall (i) deny any employee or other person access to the site of any contract undertakings or to "restricted data" within the meaning of the Atomic Energy Act of 1946, or (ii) dismiss from its undertakings under this contract any employee or other person.

ARTICLE XVI - SCIENTIFIC AND TECHNICAL DATA

All compilations of scientific and technical data (including, but not limited to, reports, notes, drawings, designs, specifications and memoranda) furnished or prepared by the Contractor pursuant to, or developed in connection with, the Contractor's undertakings under this contract, shall be property of the Government and the Government shall have the right to use such material in any manner and for any purpose without any claim on the part of the Contractor for additional compensation therefor. All provisions of paragraphs 4, 5, 6, 7, 8 and 9 of Article V relating to Government property are applicable to such material.

ARTICLE XVII - SOURCE AND FISSIONABLE MATERIALS

The Contractor agrees to conform to all regulations and requirements of the Commission with respect to accounting for source and fissionable materials (defined in the Atomic Energy Act of 1946).

ARTICLE XVIII - GUARD AND FIRE FIGHTING FORCES

In connection with its work under this contract, the Contractor shall provide such guard or fire fighting forces, with such uniforms and equipment; as the Commission may from time to time require or approve. The cost thereof shall be deemed to be allowable costs under paragraph 3 of Article IV hereof.

ARTICLE XIX - BONDS AND INSURANCE

1. Except as otherwise specifically provided, the Contractor shall exert all reasonable efforts to procure and maintain such bonds and insurance policies as are (i) required by law, or (ii) required by the Commission.

2. Except as otherwise directed by the Commission, in every instance where the premium on a bond or insurance policy is an allowable cost under the contract, the bond or insurance policy shall contain endorsements or other recitals (i) excluding, by appropriate language, any claim on the part of the insurer or obligor to be subrogated, on payment of a loss or otherwise, to any claim against the United States, and (ii) providing for at least thirty (30) days prior written notice by registered mail to the United States Atomic Energy Commission of bond or policy cancellation, as the case may be.

ARTICLE XX - STATE AND LOCAL TAXES AND FEES

The Contractor shall notify the Commission of any tax, fee, assessment, duty or other charge asserted in behalf of any State, county, municipality, or any officer, commission, body or subdivision thereof, (i) in connection with property which is or will be Government-owned property covered by Articles V, VIII, and XVI hereof, (ii) in connection with any transaction between the Contractor and the Government, or (iii) in connection with the payments by the Government for the Contractor's performance under this contract, and shall refrain from paying same unless authorized to do so by the Commission. To the extent requested by the Commission, the Contractor (i) shall take steps to cause any such taxes, fees, assessments, duties or other charges to be paid under protest, and (ii) shall cause to be assigned to the Government or its designees, any and all rights to the abatement, refund or other recoupment of such charges paid under protest.

ARTICLE XXI - NON-DISCRIMINATION IN EMPLOYMENT

In connection with the performance of this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, creed, color, or national origin; and further agrees to insert the foregoing provision in all subcontracts hereunder except subcontracts for standard commercial supplies or for raw materials.

ARTICLE XXII - TECHNICAL AND PROFESSIONAL ASSISTANCE

When, in the judgment of the Contractor, the complexity and nature of the contract undertakings are such as to require supplemental expert technical or professional assistance, services or advice in connection with special phases of a technical character, the Contractor may, with the written approval of the Commission, engage or otherwise obtain such supplemental services. Compensation and reimbursement to any consultant engaged pursuant to this article shall be governed by the provisions of Appendix "A" attached hereto except as may otherwise be specifically stated in the contract with such consultant approved by the Commission.

ARTICLE XXIII - ASSIGNMENT

Neither this contract nor any interest therein or claim thereunder shall be assigned or transferred by the Contractor except with the written approval of the Commission.

ARTICLE XXIV - LABOR DISPUTES

Whenever an actual or potential labor dispute interferes or threatens interference with the work of this contract, the Contractor shall immediately inform the Commission of such dispute and of the relevant facts.

ARTICLE XXV - COVENANT AGAINST CONTINGENT FEES

1. The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

2. Unless otherwise authorized by the Commission in writing the Contractor shall cause provisions similar to paragraph 1 above to be inserted in all subcontracts and purchase orders entered into under this contract.

ARTICLE XXVI - CONVICT LABOR

In connection with the performance of this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor. This provision shall not be construed to prevent the Contractor or any

subcontractor from obtaining any of the supplies or any component parts or ingredients to be furnished under this contract or any of the materials or supplies to be used in connection with the performance of this contract, directly or indirectly, from any Federal, state or territorial prison or prison industry, provided, that such articles, materials or supplies are not produced pursuant to any contract or other arrangements under which prison labor is hired or employed or used by any private person, firm or corporation.

ARTICLE XXVII - WALSH-HEALEY ACT

To the extent only that the Walsh-Healey Public Contracts Acts, as amended (41 United States Code 35-45) is applicable to this contract, the following provision shall apply:

There are hereby incorporated by reference, the representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

ARTICLE XXVIII - DOMESTIC ARTICLES

1. Unless the Commission shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, the Contractor, its subcontractors, and all materialmen or suppliers shall use, in the performance of the work, only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, or supplies as have been manufactured in the United States substantially all from articles, materials, or supplies, mined, produced, or manufactured, as the case may be, in the United States. The provisions of this paragraph shall not apply if the articles, materials, or supplies of the class or kind to be used, or the articles, materials, or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of satisfactory quality.

2. Unless otherwise authorized by the Commission in writing, the Contractor shall cause provisions similar to paragraph 1 above to be inserted in all subcontracts and purchase orders entered into under this contract.

ARTICLE XXIX - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE XXX - RENEGOTIATION

1. This contract shall be deemed to contain all the provisions required by Section 104 of the Renegotiation Act of 1951 (Public Law 9, 82nd Congress).

2. The Contractor agrees to insert the provisions of this paragraph, including this subparagraph 2, in all subcontracts specified in Section 103 (g) of the Renegotiation Act of 1951; provided, that the Contractor shall not be required to insert the provisions of this paragraph in any subcontract excepted by or pursuant to Section 106 of the Renegotiation Act of 1951.

ARTICLE XXXI - SAFETY AND ACCIDENT PREVENTION

The Contractor shall initiate and take all reasonable steps and precautions to protect health and minimize danger from all hazards to life and property, shall make all reports and permit all inspections as required by the Commission, and shall conform to all health and safety regulations and requirements of the Commission.

ARTICLE XXXII - COMPLIANCE WITH LAWS

Except as otherwise directed by the Commission and subject to the provisions of Article XX, STATE AND LOCAL TAXES AND FEES, the Contractor shall procure all necessary permits and licenses; obey and abide by all applicable laws, regulations, ordinances, and other rules of the United States of America, of the State, territory, or political subdivision thereof, wherever the work is done, or of any other duly constituted public authority.

ARTICLE XXXIII - APPENDIX "A"

The Contractor shall abide by the provisions of Appendix "A" of this contract, as the same may be modified from time to time; provided, however, that in the event of conflict between the provisions of said Appendix "A" and the other provisions of this contract, the latter shall prevail.

ARTICLE XXXIX - EXAMINATION OF RECORDS

1. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

2. The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under such subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract. The term subcontract as used herein does not include (i) purchase orders not exceeding One Thousand Dollars (\$1,000.00), or (ii) contracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

3. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE XXXV - CLAIMS AND LITIGATIONS

1. The Contractor shall give the Commission immediate notice of any claim against the Contractor or suit or action filed or commenced against the Contractor, arising out of or connected with the performance of this contract, irrespective of whether or not the cost or expense of such claim, suit or action, is to be borne wholly or in part by the Government hereunder and irrespective of whether the Contractor is insured against any risk which may be involved. The Contractor shall furnish immediately to the Commission copies of all pertinent papers received by the Contractor.

2. Insofar as the following shall not conflict with any policy or contract of insurance, and to the extent requested by the Commission, the Contractor, with respect to any claim, suit or action, the cost and expense of which is or would be an allowable cost as defined in paragraph 2 of Article IV, or the proceeds of which is or would be revenues covered by paragraph 5 f. of Article IV, (i) shall promptly do any and all things to effect an assignment and subrogation in favor of the Government of all the Contractor's rights and claims, except as against the Government, arising from or growing out of any such claim, suit or action, or (ii) shall promptly authorize representatives of the Government to settle, defend, or otherwise handle any such claim,

suit or action and to represent the Contractor in, and take charge of, any litigation resulting therefrom, or (iii) shall diligently handle any such claim, suit or action or defend or initiate any litigation in connection with any such claim, suit or action and in so doing, shall consult with the Commission as to the steps to be taken and shall otherwise endeavor in good faith to subserve the interests of the Government.

3. Subject to the provisions of paragraph 2 above, the Contractor shall diligently handle any claim whatsoever arising out of the performance of this contract and shall promptly defend or initiate any litigation in connection with any such claim, consulting with the Commission as to the steps to be taken.

4. With respect to any claim, matter or litigation arising out of the performance of this contract, the handling of which is undertaken by an insurance carrier or by a representative or representatives of the Government, the Contractor shall furnish all reasonable assistance and cooperation that may be requested by the Commission.

5. "Litigation", for the purposes of this Article, is defined to include proceedings before administrative agencies.

ARTICLE XXXVI - LETTER CONTRACT NO. AT(30-1)-1293

Letter Contract No. AT(30-1)-1293, entered into as of December 10, 1951, hereby is merged with and superseded by this contract.

ARTICLE XXXVII - CONTRACT APPROVAL

This contract is subject to the approval of the Director of the Division of Production of the United States Atomic Energy Commission and shall not be binding unless so approved.

ARTICLE XXXVIII - DEFINITIONS

1. As used in this contract, the terms "United States Atomic Energy Commission", "Atomic Energy Commission", and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

2. All references in this contract to Commission or Government approvals, authorizations, directions or notices contemplate and require written action.

IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first above written.

UNITED STATES OF AMERICA

By: UNITED STATES ATOMIC ENERGY COMMISSION

H. B. Fry

H. B. FRY
MANAGER
NEW YORK OPERATIONS OFFICE

Witnesses:

W. E. Kingston

P. O. Box 59 - Bayside, N. Y.
(Address)

W. F. Rieger

1740 Broadway, N.Y.C.
(Address)

SYLVANIA ELECTRIC PRODUCTS, INC.

By: J. B. Merrill

Title: Vice Pres.

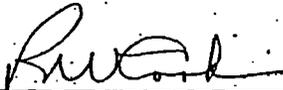
I, J. S. Hearoyd, certify that I am the SECRETARY of the corporation named as Contractor herein; that J. B. MERRILL who signed this contract on behalf of the Contractor was then VICE PRES. of said corporation; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of said corporation.

J. S. Hearoyd
Secretary

(Corporate Seal)

The above contract, AT(30-1)-1293, with Sylvania Electric Products, Inc., is hereby approved.


Director, Division of Production
United States Atomic Energy Commission

Date: 3/10/, 1953

APPENDIX "A"

Contract No. AT(30-1)-1293

with

Sylvania Electric Products, Inc.

I N D E X

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I. JOB CLASSIFICATIONS AND SALARY RANGES

PLAN "A" (Normally Exempt)

<u>Job Title</u>	<u>Grade</u>	<u>Rate Range</u>
Division Traffic Manager	6K	\$464 - \$724
Area Safety Engineer	6K	464 - 724
Supervisor of Warehousing	6K	464 - 724
Division Purchasing Agent	9J	602 - 947
Supervisor - Expediting	5K	422 - 664
Priorities Coordinator	4K	384 - 602
Chief Buyer	6K	464 - 724
Buyer	5K	422 - 664
Division Industrial Engineer	9J	602 - 947
Division Supervisor of Maintenance	8K	552 - 868
Division Manager of Quality Control	9J	602 - 947
Quality Control Spec.	7K	505 - 787
Division and Staff Counsel	13J	922 - 1492
Office Manager	7K	505 - 787
Supervisor of an Office Department	4K	384 - 602
Supervisor of an Office Department Sec.	2K	321 - 505
Manager of Accounting	12J	812 - 1338
Supervisor of Equipment Design	9J	602 - 947
Equipment Design Spec.	7K	505 - 787
Equipment Designer	4K	384 - 602
Mechanical Equipment Spec.	8K	552 - 868
Tool Room Foreman	6K	464 - 724
Supervisor of Prod. Scheduling & Control	8K	552 - 868
Supervisor of Material Control	6K	464 - 724
Tool Coordinator	6K	464 - 724
Administrative Engineer	10J	664 - 1091
Plant Manager - Class A Plant	13J	922 - 1492
Plant Manager - Class B Plant	12J	812 - 1338
Plant Manager - Class C Plant	10J	664 - 1091
Manufacturing Superintendent	9J	602 - 947
General Foreman	8K	552 - 868
Technical Foreman	6K	464 - 724
Foreman, Class I	6K	464 - 724
Foreman, Class II	3K	345 - 546
Supervisor of Personnel	7K	505 - 787
Personnel Assistant	4K	384 - 602
Safety Engineer	4K	384 - 602
Supervisor of Product Engineering	9J	602 - 947
Supervisor of Quality Control	7K	505 - 787
Supervisor of Industrial Engineers	7K	505 - 787
Industrial Engineer, Sr.	6K	464 - 724
Industrial Engineer, Jr.	3K	345 - 546
Standards Applicator	3K	345 - 546
Supervision of Production Control	7K	505 - 787
Supervisor of Plant A/C	7K	505 - 787

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Revision of all salary ranges

Effective 9/22/54

I. JOB CLASSIFICATIONS AND SALARY RANGES (continued)

PLAN "A" (Normally Exempt) - (continued)

<u>Job Title</u>	<u>Grade</u>	<u>Rate Range</u>
Cost Accountant	3K	\$345 - \$546
Purchasing Agent	5K	422 - 664
Supervisor of Maintenance	6K	464 - 724
Engineering Manager A	12J	812 - 1338
Engineering Manager B	10J	664 - 1091
Engineering Specialist	10J	664 - 1091
Section Head	9J	602 - 947
Engineer in Charge	7K	505 - 787
Senior Engineer	6K	464 - 724
Junior Engineer	3K	345 - 546
Accountant Special	9J	602 - 947
Supervisor of A/C Department	7K	505 - 787
Supervisor of A/C Department Sec.	5K	422 - 664
Accountant, Senior	4K	384 - 602
Industrial Relations Assistant	3K	345 - 546
Industrial Relations Specialist	9J	602 - 947

PLAN "B" (Non-Exempt)

Cost Accountant, Jr.	60R	\$321 - \$472
Time Study and/or Methods Clerk	59R	302 - 442
Time Study and/or Methods Clerk, Jr.	56R	247 - 360
Materials Requirements Analyst	62R	365 - 540
Production Control Clerk	59R	302 - 442
Production Control Clerk, Jr.	56R	247 - 360
Stock Clerk	59R	302 - 442
Stock Clerk, Jr.	56R	247 - 360
Drafting Section Supervisor	64R	427 - 626
Designer - Draftsman	63R	397 - 579
Draftsman	60R	321 - 473
Draftsman, Jr.	57R	265 - 391
Tracer	54R	224 - 309
Internal Expediter	59R	302 - 442
External Expediter	60R	321 - 473
Master Craftsman	64R	427 - 626
Production or Maintenance Supervisor I	62R	365 - 540
Production or Maintenance Supervisor II	60R	321 - 473
Safety Inspector	60R	321 - 473
Employment Interviewer or Counsellor	59R	302 - 442
Employment Interviewer or Counsellor, Jr.	56R	247 - 360
Nurse	57R	265 - 391
Nurse, Sr.	59R	302 - 442
Buyer, Jr.	59R	302 - 442
Production Scheduling Clerk	62R	365 - 540
Technician, Sr.	62R	365 - 540
Technician	59R	302 - 442
Technician, Jr.	56R	247 - 360
Experimental Glass Blower	62R	365 - 540

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Revision of all salary ranges Effective 9/22/54

I. JOB CLASSIFICATIONS AND SALARY RANGES (continued)

PLAN "B" (Non-Exempt) - (continued)	Grade	Rate Range
Billing Checker	54R	\$224 - \$309
Specifications	62R	365 - 540
Requisition Clerk	57R	265 - 391
Office Boy or Girl	51R	207 - 247
Supervisor of an Office Dept., Sec. (Cl.I)	60R	321 - 473
Supervisor of an Office Dept., Sec. (Cl.II)	57R	265 - 391
Functional Clerk	59R	302 - 442
Clerk, Sr.	55R	236 - 333
Routine Clerk	52R	224 - 265
Mail and File Clerk	52R	224 - 265
Office and Stockroom Clerk	54R	224 - 309
Secretary Exec.	59R	302 - 442
Secretary, Sr.	57R	265 - 391
Secretary-Steno	55R	236 - 333
Steno	54R	224 - 309
Transcriber	53R	224 - 284
Copy Typist	52R	224 - 265
Order Typist	54R	224 - 309
Duplicating Machine Operator	53R	224 - 284
Photostat and Blue Print Operator	54R	224 - 309
Multilith Operator "A"	55R	236 - 333
Multilith Operator "B"	54R	224 - 309
Multigraph Operator	54R	224 - 309
Billing Machine Operator	54R	224 - 309
Bookkeeping Machine Operator, Sr.	55R	236 - 333
Bookkeeping Machine Operator, Jr.	54R	224 - 309
Tabulating Procedure Clerk	59R	302 - 442
Tabulating Machine Operator "A"	56R	247 - 360
Tabulating Machine Operator "B"	55R	236 - 333
Key Punch Operator	54R	224 - 309
A/C Clerk, Sr.	56R	247 - 360
A/C Clerk, Jr.	54R	224 - 309
Bookkeeper, Sr.	56R	247 - 360
Bookkeeper, Jr.	54R	224 - 309
Payroll Clerk, Sr.	56R	247 - 360
Payroll Clerk, Jr.	54R	224 - 309
Cost Clerk, Sr.	56R	247 - 360
Cost Clerk, Jr.	54R	224 - 309
Invoice Clerk	55R	236 - 333
Telephone Operator & Receptionist I	56R	247 - 360
Telephone Operator & Receptionist II	54R	224 - 309
Accountant, Trainee	60R	321 - 473
Accountant, Jr.	60R	321 - 473
Traffic Clerk	62R	365 - 540
Warehouse Supervisor	58R	284 - 416
Warehouseman	54R	224 - 309
Industrial Relation Analyst or Asst., Jr.	58R	284 - 416
Routing Clerk	55R	236 - 333
Billing Clerk	56R	247 - 360
Inventory Clerk	55R	236 - 333
Addressograph Operator	54R	224 - 309

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Revision of all salary ranges Effective 9/22/54

I. JOB CLASSIFICATIONS AND SALARY RANGES (continued)

HOURLY

<u>Job Title</u>	<u>Grade</u>	<u>Rate Range</u>
Janitor	5	\$1.33 - \$1.54
Handyman	5	1.33 - 1.54
Lab Helper - Metallographic	4	1.33 - 1.51
Lab Helper Special Products	6	1.36 - 1.57
Machinist - Special Products	13	1.69 - 1.99
Group Leader - Maintenance	18	2.09 - 2.45
Mechanic "A"	17	2.00 - 2.35
Mechanic "B"	16	1.91 - 2.24
Development Machinist	20	2.28 - 2.67
Machinist "A"	18	2.09 - 2.45
Electrician	18	2.09 - 2.45
Gas Cylinder Supply	10	1.55 - 1.79
Pipefitter "A"	16	1.91 - 2.24
Tool and Stock Clerk	10	1.55 - 1.79
Tool and Die Maker "A"	20	2.28 - 2.67
Welder	18	2.09 - 2.45
Sheet Metal Worker	14	1.76 - 2.08
Tool Crib Attendant	9	1.50 - 1.72
Carpenter	16	1.91 - 2.24
Pipefitter	16	1.91 - 2.24
Lathe Operator	15	1.83 - 2.16
Milling Machine Operator	15	1.83 - 2.16
Contour Saw Operator - Learner	7	1.42 - 1.62
Tool & Die Maker "B"	18	2.09 - 2.45
Tool & Die Maker "C"	16	1.91 - 2.24
Machinist "B"	16	1.91 - 2.24
Machinist "C"	12	1.62 - 1.91
Millwright "A"	15	1.83 - 2.16
Millwright "B"	12	1.62 - 1.91
Groupleader - Maintenance	20	2.28 - 2.67
Shipping and Receiving Clerk	9	1.50 - 1.72
Stock Clerk	10	1.55 - 1.79
Caretaker	10	1.55 - 1.79
Groupleader - Equipment Assm.	19	2.18 - 2.56
Assembly Machinist "A"	18	2.09 - 2.45
Assembly Machinist "B"	16	1.91 - 2.24
Assembly Machinist "C"	11	1.59 - 1.85
Maintenance Machinist "A"	18	2.09 - 2.45
Maintenance Machinist "B"	16	1.91 - 2.24
Maintenance Machinist "C"	11	1.59 - 1.85
Guard Sergeant	13	1.69 - 1.99
Armed Courier	12	1.62 - 1.91
Armed Guard	11	1.59 - 1.85
Groupleader - Machine Shop	20	2.28 - 2.67
Inspector	20	2.28 - 2.67

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Revision of all salary ranges Effective 9/22/54

I. JOB CLASSIFICATIONS AND SALARY RANGES - HOURLY (continued)

<u>Job Title</u>	<u>Grade</u>	<u>Rate Range</u>
Pump & Boiler Maintenance	16	\$1.91 - \$2.24
Trades Helper	7	1.42 - 1.62
Laboratory Assistant - X-Ray	8	1.46 - 1.67
Engineering Assistant - Metallographic	12	1.62 - 1.91
Characterizing Powder Metallurgy Specimens	9	1.50 - 1.72
Powder Preparation, Pressing & Sintering	13	1.69 - 1.99
Engineering Assistant - Metal Processing	16	1.91 - 2.24

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Revision of all salary ranges Effective 9/22/54

II. EMPLOY REIMBURSEMENT POLICIES

A. Moving Expenses

Whenever a new key or technical employee is hired for a position in an exempt salary classification or a regular key or technical employee is transferred from a locality which is more than a reasonable commuting distance from the Sylvania plant or office in which he is to work, the Company may pay the cost of moving the employee, his immediate family, and his household goods and personal effects to (or near) the new location.

In general, the company will not pay the moving and transportation expenses of an employee living within a thirty-mile radius of the plant or office location.

Immediate family shall include a man's wife, children and any relative living with him and dependent upon him for support.

After arrival at the new location a daily allowance may be paid for a period not to exceed 30 days. This may be extended only if the employee has been unsuccessful in a sincere effort to find a place to live in the new location. Any such extension will require prior AEC approval.

Transportation expense will be reimbursed in accordance with the travel policy except that the subsistence allowance during travel will be as follows:

Employee	-	\$6.
Employee and wife	-	12.
Employee, wife and child	-	16.
Each additional person	-	4.

After arrival, the daily allowance, which includes subsistence and lodging will be as follows:

Employee	-	\$12.
Employee and wife	-	18.
Employee, wife and child	-	24.
Each additional person	-	4.

Actual expense of moving household goods and personal effects will include, packing, crating, insurance on goods in transit, unpacking, temporary storage charges not to exceed 30 days, disconnecting and connecting equipment such as stoves, ranges, etc.

B. Educational Benefits

The Company makes available to employees the following educational benefits. Payments by the company to or for the benefit of an employee are considered wages, and all such educational benefits are subject to both withholding and social security tax deductions, except when the Company requires an employee as part of his work to take a course or become a member of a society or club. In all cases

listed where the employee receives financial assistance, the employee pays the whole cost, submits the receipted bill and is reimbursed for 50% of the cost less withholding and social security tax deductions.

1. Magazines

If the employee wishes to subscribe personally to a magazine which will be helpful to him on the job, the Company will pay one-half the subscription price and the magazine may be sent directly to the employee's home or to his company address. Only technical trade or similar magazines that apply to a specific problem will be approved. Such payments are subject to tax deductions.

2. Engineering and Management Societies

Where an employee is the official representative of the Company or attends meetings as part of his work, the Company will pay the whole cost of membership. Such payments are not subject to tax deductions. If the employee wishes a personal membership, and such membership will be helpful to the employee on his job, the Company will pay one-half of the membership fee, less tax deductions.

3. Outside Educational Courses

When an employee is assigned to a course as part of his work, the Company will pay the whole cost of the course.

In cases where an employee voluntarily elects to take an outside course of study, he will receive help from the Company towards meeting his tuition costs provided the course meets the following requirements:

- a. The course will improve the performance of the employee in his present job.
- b. He must obtain approval before enrolling in the course.
- c. He must complete the course satisfactorily and pay the tuition bill.

On presentation of the receipted tuition bill and a certificate of satisfactory completion of such a course, the Company will reimburse the employee for 50% of the tuition fee, less tax deductions.

C. Employee Benefit Program

The Company provides at no cost to the employee a program covering Group Life Insurance, Pensioner's Life Insurance, Accidental Death and Dismemberment Insurance, Non-occupational Disability Benefits, Hospital Benefits, and Surgical Benefits. A booklet describing these programs is on file in the Organization and Personnel Division.

D. Reporting Time

1. An hourly employee reporting for work on any regular workday, not having been previously notified not to report, will receive full pay for his scheduled hours for the day even though idle or sent home early because of a delay, shortage or other reason beyond his control. This payment will not be made in the case of general or departmental shutdowns caused by power interruptions, fire, flood, or other conditions beyond the control of the Company.

2. No regular workday will be scheduled for less than four (4) hours.

3. Hourly employees who are called in for emergency work after they have left for the day, or during their scheduled day off, will be paid not less than four (4) hours work.

4. When an hourly employee works less than his regular scheduled hours for the day due to conditions within his own control, he will be paid only for the time worked.

5. Schedules of work hours will be made up each week for the following week.

E. Planned Overtime

1. Planned overtime payments are made to an exempt employee when he works assigned hours on a Saturday, Sunday or a paid holiday. On a paid holiday the planned overtime rate is in addition to the straight time rate. Such payments will be made when the employee's salary base rate is between \$430 and \$911 per month; and when he is classified as an executive, professional, or administrative employee. No planned overtime will be paid if the Saturday or Sunday work is a part of the employee's regular 40-hour schedule.

2. Planned overtime payments for hours worked will be made in accordance with the following schedule for any week in which an exempt employee is told to work a minimum of 2 hours on Saturday, Sunday, or a paid holiday. Payment will not be made for any worked period of less than 2 hours. Payment for work periods of 8 hours or more will be limited to 8 hours pay. Absence, for any reason, earlier in the week will not take away his planned overtime. If the employee is absent for the period assigned on Saturday, Sunday or a paid holiday, planned overtime will not be paid.

Schedule of Planned Overtime Amounts

(Subject to the pay limitations specified in paragraph 3)

Saturday or Sunday

- a. If the exempt employee's salary base rate is \$430 but less than \$460 per month, planned overtime will be paid at the rate of time and one-half.
- b. If the exempt employee's salary base rate is \$460 but less than \$693 per month, planned overtime will be paid at the rate of \$4.00 per hour.
- c. If the exempt employee's salary base rate is \$693 but less than \$911 per month, planned overtime will be paid at a straight time rate.

Paid Holiday

- a. If the exempt employee's salary base rate is \$430 but less than \$911 per month, planned overtime will be paid at a straight time rate, in addition to regular holiday pay.

3. The planned overtime payment each week will be adjusted so that the total pay for the week, exclusive of night shift premium, does not exceed \$210.

4. Planned overtime payments may be worked out for employees regularly assigned to exceptionally heavy work schedules during the normal 5-day week, Monday through Friday. These payments will be on the same basis as for Saturday or Sunday.

5. Travel time on Saturday or Sunday will be considered for purposes of planned overtime to the extent that it falls within the period of the employee's regularly scheduled hours on other days of the week.

F. Premium Shift

1. Premium shift is defined as any regular workday shift which begins outside the hours of 7:00 a.m. to 9:00 a.m.

2. Any employee assigned to a premium shift will be paid a premium of 10% of his straight time and overtime earnings for all work performed while assigned to such shift.

3. When an employee works overtime before or after his regularly scheduled shift, it will be considered as part of that shift for the purposes of calculating shift premium.

4. Whenever, for any reason, an employee's shift assignment is changed during his workweek, his shift premium for that workweek will be computed on a daily basis.

G. Vacations

1. Hourly employees on the payroll at the beginning of the vacation period, who have or will have on July 1 of the current year, the following record of continuous service, will be paid vacation pay at their current hourly base rate as indicated:

Less than 26 weeks	0 hours
26 weeks but less than 1 year.	20 hours plus 1/26 of 20 hours for each week beyond 26 weeks
1 year but less than 2 years 12 weeks	40 hours
2 years 12 weeks but less than 3 years	40 hours plus 1 hour for each week beyond 2 years 12 weeks
3 years but less than 14 years 12 weeks	80 hours
14 years 12 weeks but less than 15 years	80 hours plus 1 hour for each week beyond 14 years 12 weeks
15 years and more.	120 hours

Salary employees on the payroll at the beginning of the vacation period, who have or will have on July 1 of the current year the following records of continuous service, will be paid vacation pay at their current salary base rate for a 40-hour week as indicated:

Less than 26 weeks 0 hours
26 weeks but less than 1 year . . 40 hours plus 1/26 of 40 hours
for each week beyond 26 weeks
1 year but less than 14 years 12
weeks 80 hours
14 years 12 weeks but less than
15 years 80 hours plus 1 hour for each
week beyond 14 years 12 weeks
15 years 120 hours

Shift premium shall be added to such straight time wages for employees who, if they had worked during their vacation period, would have been assigned to a premium shift.

3. Employees who leave the Company at any time will be paid the accrued vacation pay to which their continuous service as of the time of leaving would entitle them under the applicable schedule.

4. In the event the majority of the employees have actually worked on a schedule averaging 48 hours a week for the first 6 months of the year, vacation payments provided above will be on a 48 hour week straight time pay basis so that each amount specified above will be increased by 20%.

H. Overtime Pay

1. Time and a half will be paid to hourly and non-exempt salary employees for all hours worked in excess of eight hours in any 24-hour period after the employee actually starts work.

2. The 24-hour period on consecutive days starts on the same hour as that which the employee reports for work on the first day of the week, except that if for any reason an employee reports for work at a later hour some later day in the week, the 24-hour period on the following days of that workweek will begin at such later hour.

3. Time and a half will be paid to hourly and non-exempt salary employees for all hours worked:

- a. In excess of 40 in any one workweek.
- b. During the Saturday workday.

4. Double time will be paid to hourly and non-exempt salary employees for all hours worked:

- a. During the Sunday workday.
- b. During the workday and on holidays listed in O.

5. Overtime for work during the Saturday and Sunday workdays as such will not be paid to employees on continuous operations (such as watchmen, firemen, tending gas house, etc.) but instead such an employee will be paid:

- a. One and one-half his regular straight time rate of pay for all work performed during the workday of his first scheduled day off for that workweek; and
- b. Twice his regular straight time rate of pay for all work performed during the workday of his second scheduled day off for that workweek.

Overtime for work during the holiday workday as such will be paid to employees on continuous operations for the holidays listed in O.

6. Overtime rates will not be pyramided where more than one rate applies. Only the highest single rate will be paid.

I. Savings and Retirement Plan

1. The employee contribution to the Savings and Retirement Plan is 3% of payroll earnings.
2. The company contributions to the plan are reimbursable as follows:
 - a. A prorata share of the actual normal contribution which is required to cover the currently accruing cost of benefits to be provided from contribution of the Company other than profit distributions.
 - b. A prorata share of the profit contribution up to but not to exceed five percent (5%) of direct labor cost.

The details of the plan are contained in a booklet which is on file in the Organization and Personnel Division.

J. Separation Pay

1. Any hourly employee with six or more months of continuous service who is laid off or discharged without prejudice by the Company may be given one week's notice or one week's separation pay at straight time for his regularly scheduled work week but not to exceed 40 hours.
2. Any salary employee with six or more months continuous service who is laid off or discharged without prejudice by the Company will be given two weeks' separation pay at his basic 40 hour week rate.

K. Travel Time (Hourly and Non-Exempt Salary Employees)

1. Time spent by an employee during regular working hours in traveling at the Company's instructions should be treated as hours worked. If the Company requests an employee to do a job during regular working hours which requires the employee to leave the place of business, the traveling time of the employee should be included in hours worked whether or not the particular job is within the employee's regular duties.

2. Travel time outside of regular working hours should be treated as hours worked when there is a continuation or extension of the employee's normal working day.

3. If an employee is told to report to work at a designated place other than his regular work location, but within the normal commuting area at a specified hour, or told to go directly home from such a location after completing his day's work, he will be paid for the time actually spent on the job but not for traveling time, unless the time spent going to and from such designated place of work is unreasonably disproportionate to the normal traveling time required in reporting for work at the usual work location. Normally, additional travel time in excess of one hour will be considered unreasonably disproportionate.

4. If an employee is told to report for work at a distant location requiring overnight travel by public transportation, or outside the normal commuting area, the hours spent in such travel outside of his regular working hours will not be treated as hours worked, provided that the employee is given adequate accommodations for sleep and relaxation, but the Company will pay for the costs of meals, room and transportation required in accordance with the travel policy shown in Q. If the employee chooses to use his own car instead of available public or company provided transportation, travel time in such cases will not be counted as work time unless it falls within his regular working hours.

5. If an employee is required to travel continuously for more than a full working day during which time he is not engaged in actual work for the Company, the time spent traveling during the regular working hours should be considered hours worked. The time outside of regular working hours need not ordinarily be considered hours worked except that if the employee is required to travel on Saturdays, Sundays and holidays, he should be considered as working on these days for the number of traveling hours between his established starting and stopping time on other days of the week.

6. In any case when an employee traveling for the Company is required to do any work at all, such as guarding materials, driving a car or truck or acting as a helper or relief man on a truck, such hours must be treated as hours worked.

L. Time Off for Marriage

1. When an hourly employee elects to be married at a time other than his scheduled vacation he will, upon request, be granted a week's time off without pay. If it is necessary to allow additional time for travel such additional time will be without pay.

2. When a non-exempt salary employee elects to be married at a time other than his scheduled vacation he will, upon request, be granted a week's time off with 40 hours pay. If additional time is allowed for travel such additional time will be without pay.

3. When an exempt key or technical salary employee elects to be married at a time other than his scheduled vacation and requests time off, he will be allowed up to 2 weeks with pay.

4. If an employee is married either immediately before or immediately after his scheduled vacation, such extra time off as limited above will be in addition to his scheduled vacation.

M. Jury Duty

1. Whenever employees are called for jury duty and must therefore be absent from work, they will be given time off for the duration of their service as jurors. Employees will be paid as follows during this time.

- a. Exempt employees - continue at full pay. These employees are expected to carry on their regular duties for the company during this period so far as it is possible.
- b. Hourly and non-exempt employees - The difference between their fees as jurors and their regular week's pay based on forty hours or their regularly scheduled hours, whichever is less.

N. Rest Periods

1. It has long been the practice of the Company to provide sufficient utility operators to relieve hourly employees on machine operations as necessary. Provision has also been made for relief of employees on non-machine operations.

2. In addition to the above, a ten minute rest period will be provided for factory employees at approximately the middle of each of the two work periods in any work day of eight or more hours. In shorter work days, a ten minute rest period will be provided at approximately the middle of any work period of four but less than six hours, and a fifteen minute rest period will be provided at approximately the middle of any work period of six but less than eight hours.

3. Because the work of supervisory, office and engineering employees does not permit the scheduling of a specific rest period, other provisions must be made for such employees.

O. Paid Holidays

1. New Year's Day, Good Friday, Decoration Day, Independence Day, Labor Day, Columbus Day (Salary employees only), Election Day, Thanksgiving, and Christmas.

2. When a holiday falls on Sunday, it will be observed the following Monday. When a holiday falls on Saturday, it will be observed either: (a) on the Friday preceeding the holiday; (b) by paying six days pay for 5 days work. That is, paying for Monday through Friday as days worked plus Saturday as a day of holiday pay; or (c) by declaring another and presumably more convenient date as the holiday.

P. Pay for Workmen's Compensation Waiting Period

1. When an employee received compensation for disability under a state Workmen's Compensation law, such as the New York State Law, which does not cover the one week's waiting period, the Company will pay him for that week's waiting period at the Workmen's Compensation rate, less tax deductions. The Company will make no payments under this policy when the time lost is seven calendar days or less.

2. In some states Workmen's Compensation is paid from the first day of injury if absence as a result of that injury extends beyond a specified period of time (five weeks in New York). In such states the Company will make no payment for the first week of absence where absence extends beyond these periods of time and Workmen's Compensation is paid from the first day of injury.

Q. Travel Policy

Travel on official business in the interest of this contract will be reimbursed as follows:

Actual transportation expense, plus pullman in the event travel is by rail. Transportation expense via private automobile at the rate of 7¢ per mile, plus ferry, bridge, tunnel or toll road charges and parking fees. Actual expense for lodging and an allowance of six dollars per day to cover other subsistence expenses during period of travel. Other allowable expenses include official telegrams, and telephone calls; streetcar and bus fares; taxi fares when public transportation is not practical; checking and handling of baggage.

R. Attendance at Meetings

When it is in the interest of the contract for an employee to attend professional meetings, he will be reimbursed in accordance with the Travel Policy as shown in Q.

S. Standards for Administration

1. In Excess of Maximum Rate

No person's rate will be increased to a level above the upper limit of the classification to which he is assigned.

2. Below the Minimum Rate

Wages or salaries below the minimum rate approved for a classification may be paid during probationary or training periods. That portion of an increase necessary to bring the wage or salary to the minimum of the range will not be subject to the fifteen per cent limitation on merit increases.

T. Military Leave Payment

The Company will pay to each employee with six or more months of continuous service, who is granted Long Term Military Leave, one month's pay at his current base rate, but not exceeding 173 hours of pay unless he enlists during a period of an approved occupational deferment. This payment will be made after the employee has reported to his first military station and upon receipt from him of notification of his service address, rank, and serial number.

U. Insurance

The Company will pay for each employee granted Long Term Military Leave, the premium for his group life insurance in effect at the time of his Military Leave for a period of 120 days.

* V. Sick Leave

The Contractor may at his discretion grant leaves with pay to employees who are incapacitated because of accident or illness. Any such leave in excess of fifteen working days in any calendar year is subject to approval of the Atomic Energy Commission.

* W. Miscellaneous Leave with Pay

In addition to other leaves with pay, the Contractor may grant paid leaves to employees for reasons such as death in the immediate family and illness in the immediate family, or other reasons personal in nature. If any such leave with pay exceeds five days during any calendar year, the Contractor must secure Atomic Energy Commission approval in order to be entitled to reimbursement.

** X Supper Money

When employees working standard shifts are required by the Contractor to work through their normal supper hour, the Contractor will provide for a supper period of not less than one half an hour, without pay, and will reimburse employees for the additional expense resulting from having to purchase supper up to but not in excess of \$1.50.

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*Addition of policies.	Effective 12/10/51.	1293 - RA #7
*Addition of policies.	Effective 6/25/50.	366 - RA #1
**Addition of policy	Effective 2/1/54.	1293 & 366 -RA #7

APPENDIX A

of U. S. Government Contract No. AT(30-1)-1293

WITH

SYLVANIA ELECTRIC PRODUCTS INC.

Appendix "I" in "Drawings" Folder.

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I. JOB CLASSIFICATIONS AND SALARY RANGES

PLAN "A" (Normally Exempt)

<u>Job Title</u>	<u>Grade</u>
Division Traffic Manager	6K
Area Safety Engineer	6K
Supervisor of Warehousing	6K
Division Purchasing Agent	9J
Supervisor - Expediting	5K
Priorities Coordinator	4K
Chief Buyer	6K
Buyer	5K
Division Industrial Engineer	9J
Division Supervisor of Maintenance	8K
Division Manager of Quality Control	9J
Quality Control Spec.	7K
Division and Staff Counsel	13J
Office Manager	7K
Supervisor of an Office Department	4K
Supervisor of an Office Department Sec.	2K
Manager of Accounting	12J
Supervisor of Equipment Design	9J
* Equipment Design Spec.	8K
Equipment Designer	4K
Mechanical Equipment Spec.	8K
Tool Room Foreman	6K
Supervisor of Prod. Scheduling & Control	8K
Supervisor of Material Control	6K
Tool Coordinator	6K
Administrative Engineer	10J
Plant Manager - Class A Plant	13J
Plant Manager - Class B Plant	12J
Plant Manager - Class C Plant	10J
Manufacturing Superintendent	9J
General Foreman	8K
Technical Foreman	6K
Foreman, Class I	6K
Foreman, Class II	3K
Supervisor of Personnel	7K
Personnel Assistant	4K
Safety Engineer	4K
Supervisor of Product Engineering	9J
Supervisor of Quality Control	7K
Supervisor of Industrial Engineers	7K
Industrial Engineer, Sr.	6K
Industrial Engineer, Jr.	3K
Standards Applicator	3K
Supervision of Production Control	7K
Supervisor of Plant A/C	7K

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366-RA #27
1293-RA #15

* Revision of salary grade Effective 3/1/56

I. JOB CLASSIFICATIONS AND SALARY RANGES (continued)

PLAN "A" (Normally Exempt) - (continued)

<u>Job Title</u>	<u>Grade</u>
* Engineering Specialist, Sr.	13J
Cost Accountant	3K
Purchasing Agent	5K
Supervisor of Maintenance	6K
** Engineering Manager A	13J
** Engineering Manager B	11J
Engineering Specialist	10J
** Section Head	10J
** Engineer in Charge	8K
** Senior Engineer	7K
Engineer	3K
Accountant Special	9J
Supervisor of A/C Department	7K
Supervisor of A/C Department Sec.	5K
Accountant, Senior.	4K
Industrial Relations Assistant	3K
Industrial Relations Specialist	9J

PLAN "B" (Non-Exempt)

Cost Accountant, Jr.	60R
Time Study and/or Methods Clerk	59R
Time Study and/or Methods Clerk, Jr.	56R
Materials Requirements Analyst	62R
Production Control Clerk	59R
Production Control Clerk, Jr.	56R
Stock Clerk	59R
Stock Clerk, Jr.	56R
Drafting Section Supervisor	61R
Designer - Draftsman	63R
Draftsman	60R
Draftsman, Jr.	57R
Tracer	54R
Internal Expediter	59R
External Expediter	60R
Master Craftsman	61R
Production or Maintenance Supervisor I	62R
Production or Maintenance Supervisor II	60R
Safety Inspector	60R
Employment Interviewer or Counsellor	59R
Employment Interviewer or Counsellor, Jr.	56R
Nurse	57R
Nurse, Sr.	59R
Buyer, Jr.	59R
Production Scheduling Clerk	62R
Technician, Sr.	62R
Technician	59R
Technician, Jr.	56R
Experimental Glass Blower	62R

I. JOB CLASSIFICATIONS AND SALARY RANGES (continued)

PLAN "B" (Non-Exempt) - (continued)	Grade
Billing Checker	54R
Specifications	62R
Requisition Clerk	57R
Office Boy or Girl	51R
Supervisor of an Office Dept., Sec. (Cl.I)	60R
Supervisor of an Office Dept., Sec. (Cl.II)	57R
Functional Clerk	59R
Clerk, Sr.	55R
Routine Clerk	52R
Mail and File Clerk	52R
Office and Stockroom Clerk	51R
Secretary Exec.	* 59Z
Secretary, Sr.	* 57Z
Secretary-Steno	* 55Z
Steno	54R
Transcriber	53R
Copy Typist	52R
Order Typist	51R
Duplicating Machine Operator	53R
Photostat and Blue Print Operator	54R
Multilith Operator "A"	55R
Multilith Operator "B"	54R
Multigraph Operator	51R
Billing Machine Operator	51R
Bookkeeping Machine Operator, Sr.	55R
Bookkeeping Machine Operator, Jr.	54R
Tabulating Procedure Clerk	59R
Tabulating Machine Operator "A"	56R
Tabulating Machine Operator "B"	55R
Key Punch Operator	54R
A/C Clerk, Sr.	56R
A/C Clerk, Jr.	54R
Bookkeeper, Sr.	56R
Bookkeeper, Jr.	54R
Payroll Clerk, Sr.	56R
Payroll Clerk, Jr.	54R
Cost Clerk, Sr.	56R
Cost Clerk, Jr.	54R
Invoice Clerk	55R
Telephone Operator & Receptionist I	56R
Telephone Operator & Receptionist II	54R
Accountant, Trainee	60R
Accountant, Jr.	60R
Traffic Clerk	62R
Warehouse Supervisor	58R
Warehouseman	54R
Industrial Relation Analyst or Asst., Jr.	58R
Routing Clerk	55R
Billing Clerk	56R
Inventory Clerk	55R
Addressograph Operator	54R

I. JOB CLASSIFICATIONS AND SALARY RANGES (continued)

HOURLY

<u>Job Title</u>	<u>Grade</u>
Janitor	5
Handyman	5
Lab Helper - Metallographic	4
Lab Helper Special Products	6
Machinist - Special Products	13
Mechanic "A"	17
Mechanic "B"	16
Development Machinist	20
Machinist "A"	18
Electrician	18
Gas Cylinder Supply	10
Pipefitter "A"	16
Tool and Stock Clerk	10
Tool and Die Maker "A"	20
Welder	18
Sheet Metal Worker	16
Tool Crib Attendant	10
Carpenter	16
Pipefitter	16
Lathe Operator	15
Milling Machine Operator	15
Contour Saw Operator - Learner	7
Tool & Die Maker "B"	18
Tool & Die Maker "C"	16
Machinist "B"	16
Machinist "C"	12
Millwright "A"	15
Millwright "B"	12
Group Leader, Maintenance	19
Shipping and Receiving Clerk	10
Stock Clerk	10
Caretaker	10
Groupleader - Equipment Assem.	19
Assembly Machinist "A"	18
Assembly Machinist "B"	16
Assembly Machinist "C"	11
Maintenance Machinist "A"	18
Maintenance Machinist "B"	16
Maintenance Machinist "C"	11
Guard Sergeant	13
Armed Courier	12
Armed Guard	11
Groupleader - Machine Shop	20
Inspector	20
* Electrician "C"	11

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366-RA
1293-RA

*Addition of job classification Effective 8/29/55

I. JOB CLASSIFICATIONS AND SALARY RANGES - HOURLY (continued)

<u>Job Title</u>	<u>Grade</u>
Pump & Boiler Maintenance	16
Trades Helper	8
Laboratory Assistant - X-Ray	8
Engineering Assistant - Metallographic	12
Characterizing Powder Metallurgy Specimens	9
Powder Preparation, Pressing & Sintering	13
Engineering Assistant - Metal Processing	16

Deletion of all salary ranges

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Effective 8/29/55

366-RA #26
1293-RA #11

HOURLY RATE RANGES

<u>Grade</u>	<u>Starting Rate</u>	<u>Step 3</u>	<u>Step 2</u>	<u>Base Rate or Job Rate</u>
1	1.34	1.38	1.44	1.50
2	1.36	1.40	1.47	1.52
3	1.36	1.41	1.48	1.54
4	1.38	1.44	1.50	1.58
5	1.38	1.46	1.52	1.61
6	1.41	1.49	1.55	1.64
7	1.47	1.53	1.62	1.69
8	1.51	1.60	1.66	1.74
9	1.55	1.64	1.71	1.79
10	1.62	1.69	1.78	1.86
11	1.66	1.75	1.84	1.94
12	1.69	1.79	1.90	2.00
13	1.76	1.85	1.97	2.08
14	1.83	1.95	2.06	2.17
15	1.92	2.02	2.14	2.27
16	2.00	2.10	2.23	2.35
17	2.09	2.22	2.34	2.46
18	2.18	2.32	2.44	2.58
19	2.29	2.42	2.56	2.69
20	2.39	2.55	2.69	2.82

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366-RA #26
1293-RA #11

Addition of Hourly Rate Ranges

Effective 8/29/55

MONTHLY RATE RANGES

SCHEDULE J

<u>SALARY GRADE</u>		<u>RANGE</u>
9J	\$626	\$985
10J	691	1135
11J	766	1282
12J	841	1392
13J	959	1552

SCHEDULE K

<u>SALARY GRADE</u>		<u>RANGE</u>
2K	\$334	\$525
3K	359	568
4K	399	626
5K	439	691
6K	483	753
7K	525	818
8K	574	903

SCHEDULE Z

<u>SALARY GRADE</u>		<u>RANGE</u>
55Z	\$257	\$374
57Z	295	433
59Z	334	492
60Z	354	525

366 RA #26
1293-RA #14

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Addition of Monthly Rate Ranges

Effective 8/29/56

MONTHLY RATE RANGES

SCHEDULE R

<u>SALARY GRADE</u>	<u>RANGE</u>	
51R	\$216	\$257
52R	233	276
53R	233	295
54R	233	321
55R	245	346
56R	257	374
57R	276	407
58R	295	433
59R	314	460
60R	334	492
61R	354	525
62R	380	562
63R	413	600
64R	444	651
65R	477	702

A-5C

366 RA #26
1293-RA #14

Addition of Monthly Rate Ranges

Effective 8/29/55

II. EMPLOYEE RELATIONS POLICIES

A. Moving Expenses

Whenever a new key or technical employee is hired for a position in an exempt salary classification or a regular key or technical employee is transferred from a locality which is more than a reasonable commuting distance from the Sylvania plant or office in which he is to work, the Company may pay the cost of moving the employee, his immediate family, and his household goods and personal effects to (or near) the new location.

In general, the company will not pay the moving and transportation expenses of an employee living within a thirty-mile radius of the plant or office location.

Immediate family shall include a man's wife, children and any relative living with him and dependent upon him for support.

After arrival at the new location a daily allowance may be paid for a period not to exceed 30 days. This may be extended only if the employee has been unsuccessful in a sincere effort to find a place to live in the new location. Any such extension will require prior AEC approval.

Transportation expense will be reimbursed in accordance with the travel policy except that the subsistence allowance during travel will be as follows:

Employee	-	\$6.
Employee and wife	-	12.
Employee, wife and child	-	16.
Each additional person	-	4.

After arrival, the daily allowance, which includes subsistence and lodging will be as follows:

Employee	-	\$12.
Employee and wife	-	18.
Employee, wife and child	-	24.
Each additional person	-	4.

Actual expense of moving household goods and personal effects will include, packing, crating, insurance on goods in transit, unpacking, temporary storage charges not to exceed 30 days, disconnecting and connecting equipment such as stoves, ranges, etc.

B. Educational Benefits

The Company makes available to employees the following educational benefits. Payments by the company to or for the benefit of an employee are considered wages, and all such educational benefits are subject to both withholding and social security tax deductions, except when the Company requires an employee as part of his work to take a course or become a member of a society or club. In all cases

listed below where the employee receives financial assistance, the employee pays the whole cost, submits the receipted bill and is reimbursed for 50% of the cost less withholding and social security tax deductions.

1. Magazines

If the employee wishes to subscribe personally to a magazine which will be helpful to him on the job, the Company will pay one-half the subscription price and the magazine may be sent directly to the employee's home or to his company address. Only technical trade or similar magazines that apply to a specific problem will be approved. Such payments are subject to tax deductions.

2. Engineering and Management Societies

Where an employee is the official representative of the Company or attends meetings as part of his work, the Company will pay the whole cost of membership. Such payments are not subject to tax deductions. If the employee wishes a personal membership, and such membership will be helpful to the employee on his job, the Company will pay one-half of the membership fee, less tax deductions.

3. Outside Educational Courses

When an employee is assigned to a course as part of his work, the Company will pay the whole cost of the course.

In cases where an employee voluntarily elects to take an outside course of study, he will receive help from the Company towards meeting his tuition costs provided the course meets the following requirements:

- a. The course will improve the performance of the employee in his present job.
- b. He must obtain approval before enrolling in the course.
- c. He must complete the course satisfactorily and pay the tuition bill.

On presentation of the receipted tuition bill and a certificate of satisfactory completion of such a course, the Company will reimburse the employee for 50% of the tuition fee, less tax deductions.

C. Employee Benefit Program

The Company provides at no cost to the employee a program covering Group Life Insurance, Pensioner's Life Insurance, Accidental Death and Dismemberment Insurance, Non-occupational Disability Benefits, Hospital Benefits, and Surgical Benefits. A booklet describing these programs is on file in the Organization and Personnel Division.

366 - RA #16

A-7

1293 - RA #4

Revision of Appendix "A". Effective 9/11/52

D. Reporting Time

1. An hourly employee reporting for work on any regular workday, not having been previously notified not to report, will receive full pay for his scheduled hours for the day even though idle or sent home early because of a delay, shortage or other reason beyond his control. This payment will not be made in the case of general or departmental shutdowns caused by power interruptions, fire, flood, or other conditions beyond the control of the Company.

2. No regular workday will be scheduled for less than four (4) hours.

3. Hourly employees who are called in for emergency work after they have left for the day, or during their scheduled day off, will be paid not less than four (4) hours work.

4. When an hourly employee works less than his regular scheduled hours for the day due to conditions within his own control, he will be paid only for the time worked.

5. Schedules of work hours will be made up each week for the following week.

E. Planned Overtime

1. Planned overtime payments are made to an exempt employee when he works assigned hours on a Saturday, Sunday or a paid holiday. On a paid holiday the planned overtime rate is in addition to the straight time rate. Such payments will be made when the employee's salary base rate is between \$430 and \$911 per month; and when he is classified as an executive, professional, or administrative employee. No planned overtime will be paid if the Saturday or Sunday work is a part of the employee's regular 40-hour schedule.

2. Planned overtime payments for hours worked will be made in accordance with the following schedule for any week in which an exempt employee is told to work a minimum of 2 hours on Saturday, Sunday, or a paid holiday. Payment will not be made for any worked period of less than 2 hours. Payment for work periods of 8 hours or more will be limited to 8 hours pay. Absence, for any reason, earlier in the week will not take away his planned overtime. If the employee is absent for the period assigned on Saturday, Sunday or a paid holiday, planned overtime will not be paid.

Schedule of Planned Overtime Amounts

(Subject to the pay limitations specified in paragraph 3)

Saturday or Sunday

- a. If the exempt employee's salary base rate is \$430 but less than \$460 per month, planned overtime will be paid at the rate of time and one-half.
- b. If the exempt employee's salary base rate is \$460 but less than \$693 per month, planned overtime will be paid at the rate of \$4.00 per hour.
- c. If the exempt employee's salary base rate is \$693 but less than \$911 per month, planned overtime will be paid at a straight time rate.

Paid Holiday

- a. If the exempt employee's salary base rate is \$430 but less than \$911 per month, planned overtime will be paid at a straight time rate, in addition to regular holiday pay.

3. The planned overtime payment each week will be adjusted so that the total pay for the week, exclusive of night shift premium, does not exceed \$210

4. Planned overtime payments may be worked out for employees regularly assigned to exceptionally heavy work schedules during the normal 5-day week, Monday through Friday. These payments will be on the same basis as for Saturday or Sunday.

5. Travel time on Saturday or Sunday will be considered for purposes of planned overtime to the extent that it falls within the period of the employee's regularly scheduled hours on other days of the week.

F. Premium Shift

1. Premium shift is defined as any regular workday shift which begins outside the hours of 7:00 a.m. to 9:00 a.m.

2. Any employee assigned to a premium shift will be paid a premium of 10% of his straight time and overtime earnings for all work performed while assigned to such shift.

3. When an employee works overtime before or after his regularly scheduled shift, it will be considered as part of that shift for the purposes of calculating shift premium.

4. Whenever, for any reason, an employee's shift assignment is changed during his workweek, his shift premium for that workweek will be computed on a daily basis.

G. Vacations

1. Hourly employees on the payroll at the beginning of the vacation period, who have or will have on July 1 of the current year, the following record of continuous service, will be paid vacation pay at their current hourly base rate as indicated:

Less than 26 weeks	0 hours
26 weeks but less than 1 year	20 hours plus 1/26 of 20 hours for each week beyond 26 weeks
1 year but less than 2 years 12 weeks	40 hours
2 years 12 weeks but less than 3 years	40 hours plus 1 hour for each week beyond 2 years 12 weeks
3 years but less than 14 years 12 weeks	80 hours
14 years 12 weeks but less than 15 years	80 hours plus 1 hour for each week beyond 14 years 12 weeks
15 years and more	120 hours

366-RA #23
1293-RA #11

Salary employees on the payroll at the beginning of the vacation period, who have or will have on July 1 of the current year the following records of continuous service, will be paid vacation pay at their current salary base rate for a 40-hour week as indicated:

- Less than 26 weeks 0 hours
- 26 weeks but less than 1 year . . . 40 hours plus 1/26 of 40 hours
for each week beyond 26 weeks
- 1 year but less than 14 years 12
weeks 80 hours
- 14 years 12 weeks but less than
15 years 80 hours plus 1 hour for each
week beyond 14 years 12 weeks
- 15 years 120 hours

Shift premium shall be added to such straight time wages for employees who, if they had worked during their vacation period, would have been assigned to a premium shift.

3. Employees who leave the Company at any time will be paid the accrued vacation pay to which their continuous service as of the time of leaving would entitle them under the applicable schedule.

4. In the event the majority of the employees have actually worked on a schedule averaging 48 hours a week for the first 6 months of the year, vacation payments provided above will be on a 48 hour week straight time pay basis so that each amount specified above will be increased by 20%.

H. Overtime Pay

1. Time and a half will be paid to hourly and non-exempt salary employees for all hours worked in excess of eight hours in any 24-hour period after the employee actually starts work.

2. The 24-hour period on consecutive days starts on the same hour as that which the employee reports for work on the first day of the week, except that if for any reason an employee reports for work at a later hour some later day in the week, the 24-hour period on the following days of that workweek will begin at such later hour.

3. Time and a half will be paid to hourly and non-exempt salary employees for all hours worked:

- a. In excess of 40 in any one workweek.
- b. During the Saturday workday.

4. Double time will be paid to hourly and non-exempt salary employees for all hours worked:

- a. During the Sunday workday.
- b. During the workday and on holidays listed in O.

5. Overtime for work during the Saturday and Sunday workdays as such will not be paid to employees on continuous operations (such as watchmen, firemen, tending gas house, etc.) but instead such an employee will be paid:

- a. One and one-half his regular straight time rate of pay for all work performed during the workday of his first scheduled day off for that workweek; and
- b. Twice his regular straight time rate of pay for all work performed during the workday of his second scheduled day off for that workweek.

Overtime for work during the holiday workday as such will be paid to employees on continuous operations on the holidays listed in O.

6. Overtime rates will not be pyramided where more than one rate applies. Only the highest single rate will be paid.

I. Savings and Retirement Plan

1. The employee contribution to the Savings and Retirement Plan is 3% of payroll earnings.
2. The company contributions to the plan are reimbursable as follows:
 - a. A prorata share of the actual normal contribution which is required to cover the currently accruing cost of benefits to be provided from contribution of the Company other than profit distributions.
 - b. A prorata share of the profit contribution up to but not to exceed five percent (5%) of direct labor cost.

The details of the plan are contained in a booklet which is on file in the Organization and Personnel Division.

J. Separation Pay

1. Any hourly employee with six or more months of continuous service who is laid off or discharged without prejudice by the Company may be given one week's notice or one week's separation pay at straight time for his regularly scheduled work week but not to exceed 40 hours.
2. Any salary employee with six or more months continuous service who is laid off or discharged without prejudice by the Company will be given two weeks' separation pay at his basic 40 hour week rate.

K. Travel Time (Hourly and Non-Exempt Salary Employees)

1. Time spent by an employee during regular working hours in traveling at the Company's instructions should be treated as hours worked. If the Company requests an employee to do a job during regular working hours which requires the employee to leave the place of business, the traveling time of the employee should be included in hours worked whether or not the particular job is within the employee's regular duties.

2. Travel time outside of regular working hours should be treated as hours worked when there is a continuation or extension of the employee's normal working day.

3. If an employee is told to report to work at a designated place other than his regular work location, but within the normal commuting area at a specified hour, or told to go directly home from such a location after completing his day's work, he will be paid for the time actually spent on the job but not for traveling time, unless the time spent going to and from such designated place of work is unreasonably disproportionate to the normal traveling time required in reporting for work at the usual work location. Normally, additional travel time in excess of one hour will be considered unreasonably disproportionate.

4. If an employee is told to report for work at a distant location requiring overnight travel by public transportation, or outside the normal commuting area, the hours spent in such travel outside of his regular working hours will not be treated as hours worked, provided that the employee is given adequate accommodations for sleep and relaxation, but the Company will pay for the costs of meals, room and transportation required in accordance with the travel policy shown in Q. If the employee chooses to use his own car instead of available public or company provided transportation, travel time in such cases will not be counted as work time unless it falls within his regular working hours.

5. If an employee is required to travel continuously for more than a full working day during which time he is not engaged in actual work for the Company, the time spent traveling during the regular working hours should be considered hours worked. The time outside of regular working hours need not ordinarily be considered hours worked except that if the employee is required to travel on Saturdays, Sundays and holidays, he should be considered as working on these days for the number of traveling hours between his established starting and stopping time on other days of the week.

6. In any case when an employee traveling for the Company is required to do any work at all, such as guarding materials, driving a car or truck or acting as a helper or relief man on a truck, such hours must be treated as hours worked.

L. Time Off for Marriage

1. When an hourly employee elects to be married at a time other than his scheduled vacation he will, upon request, be granted a week's time off without pay. If it is necessary to allow additional time for travel such additional time will be without pay.

2. When a non-exempt salary employee elects to be married at a time other than his scheduled vacation he will, upon request, be granted a week's time off with 40 hours pay. If additional time is allowed for travel such additional time will be without pay.

3. When an exempt key or technical salary employee elects to be married at a time other than his scheduled vacation and requests time off, he will be allowed up to 2 weeks with pay.

4. If an employee is married either immediately before or immediately after his scheduled vacation, such extra time off as limited above will be in addition to his scheduled vacation.

M. Jury Duty

1. Whenever employees are called for jury duty and must therefore be absent from work, they will be given time off for the duration of their service as jurors. Employees will be paid as follows during this time.

a. Exempt employees - continue at full pay. These employees are expected to carry on their regular duties for the company during this period so far as it is possible.

b. Hourly and non-exempt employees - The difference between their fees as jurors and their regular week's pay based on forty hours or their regularly scheduled hours, whichever is less.

N. Rest Periods

1. It has long been the practice of the Company to provide sufficient utility operators to relieve hourly employees on machine operations as necessary. Provision has also been made for relief of employees on non-machine operations.

2. In addition to the above, a ten minute rest period will be provided for factory employees at approximately the middle of each of the two work periods in any work day of eight or more hours. In shorter work days, a ten minute rest period will be provided at approximately the middle of any work period of four but less than six hours, and a fifteen minute rest period will be provided at approximately the middle of any work period of six but less than eight hours.

3. Because the work of supervisory, office and engineering employees does not permit the scheduling of a specific rest period, other provisions must be made for such employees.

O. Paid Holidays

1. New Year's Day, Good Friday, Decoration Day, Independence Day, Labor Day, Columbus Day (Salary employees only), Election Day, Thanksgiving, and Christmas.

2. When a holiday falls on Sunday, it will be observed the following Monday. When a holiday falls on Saturday, it will be observed either: (a) on the Friday preceding the holiday; (b) by paying six days pay for 5 days work. That is, paying for Monday through Friday as days worked plus Saturday as a day of holiday pay; or (c) by declaring another and presumably more convenient date as the holiday.

P. Pay for Workmen's Compensation Waiting Period

1. When an employee received compensation for disability under a state Workmen's Compensation law, such as the New York State Law, which does not cover the one week's waiting period, the Company will pay him for that week's waiting period at the Workmen's Compensation rate, less tax deductions. The Company will make no payments under this policy when the time lost is seven calendar days or less.

2. In some states Workmen's Compensation is paid from the first day of injury if absence as a result of that injury extends beyond a specified period of time (five weeks in New York). In such states the Company will make no payment for the first week of absence where absence extends beyond these periods of time and Workmen's Compensation is paid from the first day of injury.

Q. Travel Policy

Travel on official business in the interest of this contract will be reimbursed as follows:

Actual transportation expense, plus pullman in the event travel is by rail. Transportation expense via private automobile at the rate of 7¢ per mile, plus ferry, bridge, tunnel or toll road charges and parking fees. Actual expense for lodging and an allowance of six dollars per day to cover other subsistence expenses during period of travel. Other allowable expenses include official telegrams, and telephone calls; streetcar and bus fares; taxi fares when public transportation is not practical; checking and handling of baggage.

R. Attendance at Meetings

When it is in the interest of the contract for an employee to attend professional meetings, he will be reimbursed in accordance with the Travel Policy as shown in Q.

S. Standards for Administration

1. In Excess of Maximum Rate

No person's rate will be increased to a level above the upper limit of the classification to which he is assigned.

2. Below the Minimum Rate

Wages or salaries below the minimum rate approved for a classification may be paid during probationary or training periods. That portion of an increase necessary to bring the wage or salary to the minimum of the range will not be subject to the fifteen per cent limitation on merit increases.

T. Military Leave Payment

The Company will pay to each employee with six or more months of continuous service, who is granted Long Term Military Leave, one month's pay at his current base rate, but not exceeding 173 hours of pay unless he enlists during a period of an approved occupational deferment. This payment will be made after the employee has reported to his first military station and upon receipt from him of notification of his service address, rank, and serial number.

U. Insurance

The Company will pay for each employee granted Long Term Military Leave, the premium for his group life insurance in effect at the time of his Military Leave for a period of 120 days.

V. Sick Leave

The Contractor may at his discretion grant leaves with pay to employees who are incapacitated because of accident or illness. Any such leave in excess of fifteen working days in any calendar year is subject to approval of the Atomic Energy Commission.

W. Miscellaneous Leave with Pay

In addition to other leaves with pay, the Contractor may grant paid leaves to employees for reasons such as death in the immediate family and illness in the immediate family, or other reasons personal in nature. If any such leave with pay exceeds five days during any calendar year, the Contractor must secure Atomic Energy Commission approval in order to be entitled to reimbursement.

*X. Supper Money

When employees working standard shifts are required by the Contractor to work through their normal supper hour, the Contractor will provide for a supper period of not less than one half an hour, without pay, and will reimburse employees for the additional expense resulting from having to purchase supper up to but not in excess of \$1.50.

Y. Payment of Employment Agency Fee

When, in the contractor's opinion, payment of employment agency fees is necessary to secure properly qualified personnel, such payment will be reimbursed under the contract, provided that the agency fee does not exceed 5% of the offered annual salary.

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*Revision of effective date. Effective 12/10/51 1293 - RA #12
*Revision of effective date. Effective 7/1/48 366 - RA #24

Z. Printed Material

The cost of printed material which is distributed to employees for training, information and indoctrination will be reimbursed. The type of material covered includes "Welcome to Sylvania", the "Beam" and "Annual Financial Report".

A-a. Employee Association

The contractor's contribution to the Sylvania Employee Association will be reimbursed at the rate of \$.06 per employee per week up to January 1, 1955, at which time the contribution will increase to \$.09. The Association sponsors social and recreational activities such as softball, Christmas parties, etc.

SALE OF CERTAIN ASSETS OF
SYLCOR DIVISION, HICKSVILLE, NEW YORK
TO NATIONAL LEAD COMPANY

SALE OF CERTAIN ASSETS OF
SYLOR DIVISION, HICKSVILLE, NEW YORK
TO NATIONAL LEAD COMPANY

I N D E X

	<u>ITEM</u>
Agreement - June 10, 1966 - between Sylvania and National Lead	1.
Closing Statement - August 26, 1966	2.
Bill of Sale dated August 26, 1966 for all equipment and documents shipped to National Lead as of August 24, 1966	3.
License Agreement - Sylvania to National Lead - August 26, 1966	4.
Certified copy of Sylvania's Board resolution authorizing sale to National Lead	5.
Bill of Sale and Release dated March 22, 1967 transferring all other equipment and documents and release of Sylvania from further obligations together with Exhibit A	6.
Certified copy of National Lead's Board resolution authorizing purchase	7.
Consent and Waiver State of New York Department of Taxation and Finance covering sales tax on sale of Sylcor assets	8.
Check request State of New York Department of Taxation and Finance for \$670.48 - sales tax on sale of Sylcor assets	8a.
Photocopy of check to State of New York Department of Taxation and Finance	8b.
Letter dated September 24, 1968 State of New York Department of Taxation and Finance acknowledgment of certified check	8c.

AGREEMENT

THIS AGREEMENT made this 10 day of June, 1966, by and between SYLVANIA ELECTRIC PRODUCTS INC. ("Sylvania"), a Delaware corporation, having its executive offices at 730 Third Avenue, New York, New York, and NATIONAL LEAD COMPANY ("National"), a New Jersey corporation, having its executive offices at 111 Broadway, New York, New York,

WHEREAS THAT:

WHEREAS, Sylvania has agreed to sell to National and National has agreed to purchase from Sylvania certain of the assets located in Ricksville, New York of the Sylecor Division ("Sylecor") of Sylvania; and

WHEREAS, Sylvania has agreed to grant licenses under certain of its patents in the Nuclear Field, as hereinafter defined, to National and National has agreed to purchase said licenses from Sylvania;

NOW, THEREFORE, in consideration of the premises and the mutual covenants and agreements herein contained, it is agreed as follows:

I

DEFINITIONS

1.1 "Nuclear Field" shall mean the metallurgical fabrication, use and sale of commercial nuclear reactor fuel elements or components thereof, to the extent performed by Sylecor in the past, including the research or engineering related thereto. The Nuclear Field shall not include, by way of example but not limitation, either the destruction or treatment of ores or raw materials or the manufacture from these ores or raw materials of semi-products, as such and in and of themselves, including but not limited to metals, such as uranium, thorium, aluminum, magnesium, beryllium, zirconium, niobium, hafnium, plutonium, or stainless steel, and it shall not include information relating to any of the

forgoing which, as a result of restrictions imposed by the United States Government or its agencies, including but not limited to the Atomic Energy Commission, cannot be disclosed to third parties. "Nuclear" shall mean any process capable of bringing about or sustaining a chain reaction of atoms nuclei, including but not limited to the processes of fission and fusion.

II

REPRESENTATIONS AND WARRANTIES OF BYLVANIA

2.1 Bylvania represents, warrants and agrees as follows:

- (a) Bylvania is a corporation duly organized and existing and is in good standing under the laws of the State of Delaware and has full corporate power to carry on its business as now conducted, including the business presently conducted by Blycor.
- (b) The "Nuclear Fuel Equipment Listing as of April 30, 1966", attached hereto as Exhibit A, presents fairly, as of said date, substantially all the equipment of Blycor ("Blycor Equipment") used in Blycor's molten reactor commercial fuel business and located at its plant in Richsville, New York.
- (c) Since April 30, 1966, there has not been any damage in the Blycor Equipment, except changes arising in the ordinary course of business, including but not limited to reasonable wear and tear thereof.
- (d) Bylvania owns the Blycor Equipment free and clear of all liens and encumbrances.
- (e) The Board of Directors of Bylvania shall have, prior to the Closing Date, authorized and approved the execution and delivery of this Agreement and the consummation of the transactions contemplated herein.
- (f) All the warranties specified herein will be true as of the Closing Date.

(g) Except as expressly set forth above, Sylvania makes no warranties or representations, and no other warranties or representations are to be implied.

III

REPRESENTATIONS AND WARRANTIES OF NATIONAL

3.1 National represents and warrants as follows:

(a) National is a corporation duly organized and existing and in good standing under the laws of the State of New Jersey and has full corporate power to carry on its business as now conducted.

(b) The execution of this Agreement and the consummation of the transactions contemplated herein have been duly authorized by the Board of Directors or the Executive Committee of National, and no further action by the Board of Directors is necessary for such execution.

(c) All the warranties specified herein will be true as of the Closing Date.

(d) Except as expressly set forth above, National makes no warranties or representations, and no other warranties or representations are to be implied.

IV

SALE OF ASSETS

4.1 Sylvania, subject to the terms of this Agreement, shall sell, convey, assign and deliver to National at Hicksville, New York, and National shall purchase and accept delivery from Sylvania all of the following assets of Sylcor:

(a) The Sycor Equipment and other agreed upon equipment and tooling.

(b) All Sylvania's transferable rights, title and interest in the following written documents in the possession of, and used by

Sylcor in its commercial nuclear fuel business, selected by National pursuant to Paragraph 10.2 below:

- (i) engineering reports
- (ii) quality control reports
- (iii) cost estimating records
- (iv) marketing records
- (v) reports and/or performance records on past contracts, inspection, material handling, storage, shipping, and accountability

4.2 Sylvania shall transfer and deliver title to the Sylcor Equipment, other agreed upon equipment and tooling, and documents specified in Paragraph 4.1 hereof on the Closing Date subject to the following conditions:

(a) On the Closing Date, title to the Sylcor Equipment and other agreed upon equipment and tooling shall be transferred to National, in place at Sylvania's Hicksville, New York plant and National, at its expense, within thirty (30) days thereafter, shall dismantle, pack and remove said equipment and tooling from Sylvania's facility. After the transfer of title to such equipment and tooling pursuant to this Paragraph 4.2 (a) or 4.2 (b) below, National shall be responsible for damage to said equipment and tooling and for any damage to Sylvania's premises occurring in the disconnection, dismantling and removal of said equipment and tooling, except to the extent said damages, if any, are attributable to the acts of Sylvania, its agents or employees.

(b) Notwithstanding Paragraph 4.2 (a) above, in the event Sylcor shall require the use of any of the Sylcor Equipment in order to complete any commercial nuclear fuel contract which has not been completed as of the Closing Date, Sylvania may retain title to said required equipment for a period of time after the Closing Date to be agreed

upon and to be set forth in Exhibit C attached hereto and made a part hereof, at which time title thereto shall be transferred, delivered and removed in accordance with the provisions of Paragraph 4.2 (a) above; furthermore, upon mutual agreement of the parties, any or all of the Sylcor Equipment, other agreed upon equipment and tooling may be transferred, delivered and removed prior to the Closing Date, and National shall be liable for damages in accordance with Paragraph 4.2 (a) above.

(c) On the Closing Date, Sylvania shall transfer and deliver to National at Hicksville, New York, all the documents referred to in Paragraph 4.1 (b) above, and as selected by National pursuant to Paragraph 10.2 of this Agreement; provided, however, in the event Sylvania concludes that it is necessary to retain the original of any of the aforesaid material for any reason, including but not limited to contract obligations or governmental rules or regulations, then National shall make copies thereof and the original thereof shall remain with Sylvania for the period required by Sylvania.

4.3 On the Closing Date, Sylvania shall deliver to National a true and correct certified copy of Sylvania's Board of Directors' authorization of the execution and delivery of this Agreement and the consummation of the transactions contemplated herein.

4.4 On the Closing Date, National shall deliver to Sylvania a true and correct certified copy of National's Board of Directors' or Executive Committee's authorization of the execution and delivery of this Agreement and the consummation of the transactions contemplated herein.

4.5 The consummation of the transactions contemplated in this Agreement is not contingent on any of Sylcor's employees accepting employment with National, or in the event Sylcor's employees are hired by

National, resulting in the supply of National.

v

SYSTEM OF LICENSE AND SALE OF EQUIPMENT

5.1 Aylward, as of the Closing Date, shall grant to National a royalty-free non-exclusive license to make, have made, use, lease or sell in the Nuclear Field under United States Letters Patent listed in Exhibit 3 attached hereto. Further, Aylward, as of the Closing Date, shall import or cause to be imported to National the know-how in the Nuclear Field belonging to Aylward, related to the use of the equipment and tooling purchased pursuant to this Agreement and represented by the documents referenced in Paragraph 4.1 (b) above.

5.2 The patents listed in Exhibit 3 are represented by Aylward to be all of the patents now owned or controlled by Aylward which arose out of and relate directly to its present business in the Nuclear Field and Aylward agrees that, after the Closing Date, it will not assert any of its patents issued from applications pending on or before the Closing Date in the Nuclear Field against National or against any customer of National based upon use or sale of products purchased from National in the Nuclear Field.

v

FINANCIAL PRICE

6.1 As sole consideration for the transfer of assets from Aylward to National under the provisions of this Agreement, National shall make payment of the aggregate principal sum of Six Hundred Thousand Dollars (\$600,000.00) to Aylward, payable as follows:

- (a) The sum of One Hundred Thousand Dollars (\$100,000.00) at the time of execution of this Agreement.
- (b) The sum of Five Hundred Thousand Dollars (\$500,000.00) on the Closing Date.

VII

CLOSING DATE

7.1 The Closing ("Closing Date") shall be held at the offices of Sylvania at 730 Third Avenue, New York, New York, at 11 A.M. on August 26, 1966.

VIII

COMPLETION OF SYLCOOR WARRANTIES

8.1 In the event that Sylvania, any time within the eighteen month period following the Closing Date, is obligated or finds it desirable to perform work under the terms of any of its outstanding warranties to customers of Sylcoor under the contracts listed in Exhibit B attached hereto, upon Sylvania's request, National shall complete said work on any or all of said contracts up to a maximum of the number of elements or components thereof listed in the attached Exhibit B. Such work shall be completed with due diligence and National shall charge Sylvania only its actual cost to perform said work. Cost, as used herein, shall include direct labor cost plus cost of material plus overhead and administrative charges calculated according to standard accounting practices. National shall be responsible, at its expense, to remedy any defects in work performed pursuant hereto. In the event Sylvania desires to rework elements under said warranties in excess of the amounts listed in the attached Exhibit B, National agrees to bid on said work within thirty (30) days after notice by Sylvania.

IX

TAXES

9.1 National shall pay all sales, use, transfer or other taxes payable in connection with the conveyance, assignment, transfer or delivery by Sylvania to National of the assets transferred pursuant to

this Agreement, and shall indemnify Sylvania from any claim that may be made against it for said taxes.

X

GENERAL

10.1 The transfer of the assets of Sylvania pursuant to this Agreement shall be made by bills of sale, assignment or other instruments of transfer, as shall be appropriate to carry out this Agreement. Sylvania and National will execute and deliver, each to the other, on or after the Closing Date, such other instruments and do and perform all such other acts as may be reasonably required by legal counsel for either party fully to carry out and implement the provisions of this Agreement.

10.2 Sylvania, with respect to the Nuclear Field, shall give to National and to its representatives, including accountants and engineers, full access during normal business hours throughout the period prior to the Closing Date, commencing on the execution date of this Agreement, to all of the Sycloc's properties, books, contracts, commitments and records, and shall furnish National, during such period, all such information in the Nuclear Field concerning Sycloc's affairs as National may reasonably request. At least thirty (30) days prior to the Closing Date, National shall designate each of the items listed in Paragraph 4.1 (b) it wishes to remove from the premises of Sycloc or make copies thereof.

10.3 The risk of loss or damage of the assets to be conveyed hereunder by fire, theft, breakage, or otherwise from the date of this Agreement to the date of transfer of title thereof, is assumed by Sylvania and, in case any such loss occurs, Sylvania shall repair the damage, if any, or otherwise make good the loss to National by an appropriate reduction in the purchase price specified in Article VI of this Agreement.

10.4 Any notice, request, instruction, or other document to be given hereunder by either party hereto to the other, shall be in writing and delivered personally or sent by registered mail, postage prepaid, if to Sylvania: attention of Mr. William Mandaro, Sylvania Division, Sylvania Electric Products Inc., Cantonius Road, Hicksville, New York; and if to National: attention of Mr. A. Stewart, National Lead Company, 1130 Central Avenue, Albany, New York.

10.5 This Agreement shall not be assignable by either party. Nothing in this Agreement, express or implied, is intended to confer upon any person, except as provided in this Agreement, other than the parties hereto, and their successors, any rights or remedies, or by reason of this Agreement.

10.6 This Agreement is executed, delivered and intended to be performed in the State of New York, and shall be construed and enforced in accordance with, and shall be governed by the laws of such State.

10.7 National represents that no broker was responsible for this sale and National shall indemnify Sylvania against any claim for brokerage, provided National is given the opportunity, through its own counsel, to defend any such claim.

10.8 This Agreement sets forth the entire transaction between the parties, and there have been no representations, warranties, or conditions other than those set forth herein, and it shall not be changed or terminated orally.

10.9 This Agreement may be executed simultaneously in two or more counterparts, each of which shall be deemed an original, but

all of which together shall construe one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement on the day and year first above written.

SILVANIA ELECTRIC PRODUCTS INC.

By Jay M. White

ATTEST:

William F. Rieger
Secretary

NATIONAL LEAD COMPANY

By Chambers
VICE PRESIDENT

ATTEST:

J. J. Lawler
Secretary

EXHIBIT A

SYLVANIA ELECTRIC PRODUCTS INC.
SYLCOR DIVISION
NUCLEAR FUEL EQUIPMENT LISTING
As of April, 1966

30

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
2	Telephone Cabinet		9/57	69.
5	Surface Grinder		7/57	500.
8	Arbor Saw		10/43	201.
9	Band Saw	00210842	9/45	211.
10	Auto Welder		6/57	5,033.
10A	AC Adapt F Weld		6/59	522.
14	Drill Press	00101140	11/44	50.
17	Milling Mach.		5/57	4,171.
18	Roll Print Mach	00005843	12/52	640.
19	Drilling Mach	18073M	12/49	320.
20	Drill Press		7/53	475.
27	Air Pack 6000B4A		7/56	210.
29	Verifax		8/56	395.
30	Kardex Cabinet		8/52	135.
31	Kardex Cabinet		8/52	135.
40	Vacuum Pump		5/44	481.
52	Fluoroscope		7/56	210.
67	Power Sq Shear		6/57	8,057.
100	Air Pack		12/53	201.
112	Midget King Hoist		12/48	206.
114	Bar & Angle Bender		11/55	160.
130	Pirani Gauge		8/48	178.
157	Typewriter 141N	03825373	1/49	141.
158	Typewriter	11090826	9/51	405.
163	Calculator	00587260	12/52	425.
167	Lift Truck	10-532	10/52	667.
176	Radiograph		6/53	314.
180	Typewriter	00140837	12/52	395.
182	Exec Desk		12/56	197.
183	Bookcase		12/56	149.
184	Exec Desk		12/56	161.
185	Bookcase		12/56	149.
187	Roller Leveler		11/57	5,351.
190	Drying Oven		12/57	444.
199	Keysort Card Cab		7/53	132.
214	Typewriter	00140839	12/52	395.
219	Typewriter	11010201	3/52	402.
225	E&A Balance	004M1756	4/56	365.
226	Typist Desk		12/48	70.
245	Wal Sec Desk		11/55	127.
253	Pirani Gauge		1/50	134.
258	Bookcase		7/55	79.

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

Asset No.	Description	Serial No.	Purch. Date	First Cost
273	Flame Photometer		4/57	480
274	Spectrophotometer		2/57	975
277	Super Sealer		12/52	1,185
314	Scintilate Count		3/58	435
317	Vacuum Pump	002380 5	11/44	141
328	Calculator	00539048	5/56	821
329	10 Key Adder	00857689	7/53	341
330	Adding Mach	1094622C	10/54	379
332	Adding Mach	1094630C	10/54	379
333	Adding Mach	01187041	5/56	388
348	Analyt Balance		2/48	198
352	300T Hyd Press		8/43	3,910
353	Photomicrograph		8/44	489
361	PH Meter		12/48	91
394	Pirani Gauge		12/48	193
406	Black Hawk Pump		5/54	366
408	Diffusion Pump		12/48	135
409	Electrodryer	00016293	12/45	120
410	Electrodryer		7/51	175
413	Audiometer	00014206	2/57	416
417	Kardex File		5/56	195
422	Thermo Fax	00007120	5/58	429
424	Desk		8/58	245
425	Credenza		8/58	112
428	Special Desk		10/58	751
430	Legal File		5/57	122
431	Special Desk		10/58	482
436	Chairs		10/58	149
437	Chairs		10/58	149
438	Gauge Single Sta		10/58	345
440	Lathe		11/58	3,588
450	Press		11/58	260
451	Vert Furn 11 4KW	00096087	3/59	3,040
452	Cont Fr Vert Fur		3/59	886
453	Milling Mach		12/58	2,971
454	Alpha Counter		12/58	576
464	Adding Mach	00839783	7/53	341
474	Desk		4/59	177
476	File Cabinet		4/59	119
477	File Cabinet		4/59	120
478	Surface Grinder	10156119	4/59	6,864
479	Dividing Head		7/59	289
481	Buterfly File MA		5/59	325
483	Kardex File		8/59	156

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
486	Desk		7/59	350
491	Cyclograph		3/59	969
492	• Elec Control Pan		4/59	5,189
499	File Cabinet		9/59	114
500	Type Stand		9/59	66
504	60 x 30 Desk		10/59	173
507	Atom Analyzer		12/59	2,951
801	Dust Collectors		9/56	204
802	Jar Mill		7/56	607
803	Port Elec Hoist		3/57	208
804	Exh Hood Blower	Bldg 4	8/57	667
807	Elec Wire Hoist		12/56	396
809	Elec Mold Furnace		8/57	1,075
810	Induct Cast Furn		4/59	13,565
811	2NH Cail IR Roll		4/57	780
812	Set Cold Rolls		5/57	1,466
813	Set Chil St Roll	083746 7	1/56	550
814	Power Rod Parter		11/58	728
815	Indust Fan	00000GAR	10/56	199
816	Exhaust Blower	00000GAR	3/56	266
817	Set Dust Boxes		2/57	2,900
818	Sub Sieve Sizer		7/56	360
819	Pulverizing Mill	0005S964	5/56	225
820	Typewriter		11/58	217
821	Typewriter	00113718	11/58	208
822	Adding Mach	00944310	11/58	234
823	Adding Mach	00857571	11/58	208
824	Fork Lift Truck		11/58	1,569
825	Lathe 22 x 84 10HP		11/58	3,451
826	Vert Mill Mach	00017950	11/58	1,464
827	Simp Mill Mach	023 3201	6/59	5,060
829	Layout Table		11/58	131
831	Milling Mach	00005576	11/58	3,157
832	Lathe 16 x 54	00017467	11/58	3,951
833	6 x 7 Spray Booth		11/58	501
834	Air Compressor	0003YC 1	12/58	700
835	80 Ft Steel Part	00Bldg 9	11/58	1,038
836	Stock Racks		11/58	941
837	Cabinet Bench		1/59	146
838	Cabinet Bench		1/59	178
839	Cabinet Bench		1/59	178
840	Gas Prop Counter		12/58	576
841	Acces-Metalgraph		12/58	144
841A	Land Camera		11/59	114

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
842	Cent Filter Pump		12/58	245
843	Polaroid Camera		1/59	139
844	Exec Chair		12/58	149
845	Bench		1/59	148
846	Bench		1/59	148
848	Water Cooler	00820764	12/58	167
849	Water Cooler	00824421	12/58	167
850	Electric Furnace	00095944	4/59	20,952
851	Dew Pointer	00003808	1/59	414
853B	Power Supply		12/58	72,927
853F	Fire Alarm System	Bldg 4	3/60	841
853Y	Weather Canopies	Bldg 4	7/59	2,160
853Z	2 Canopy Exh Sys	Bldg 4	12/59	445
853A	PA System	Bldg 4	1/59	546
853C	Power Supply	PRDC	6/59	14,107
854	Hi Temp Elec Furn		4/59	15,677
855	Exec Chair		1/59	149
856	Exec Chair		1/59	149
857	Utility Cart		12/58	123
858	Utility Truck		12/58	123
860	Furnace Exh Sys	Bldg 9	1/59	480
861	Purifier		1/59	931
862	Gramatic Balance		1/59	870
863	Block Set		1/59	270
864	Mettler Scale	154J5208	1/59	539
865	Desk		2/59	177
866	Cabinet W Lock		2/59	116
867	Cabinet W lock		2/59	116
868	File Cabinet		2/59	116
869	File Cabinet		2/59	116
870	Cabinet W Lock		2/60	116
871	Cabinet W Lock		2/59	116
872	Thermo Spray Gun		1/59	921
873	Bin Ped Grinder		1/59	248
874	Work Bench		12/58	106
875	Work Bench		12/58	106
876	Work Bench		12/58	106
877	Sp Groov IR Roll		2/59	2,173
878	Lectrodryer Hyd	005290D1	1/59	4,680
879	Lab Sink		1/59	198
880	6 Double Lockers	880 885	1/59	495
886	Exh Sys Vac Melt	0000GAR	2/59	2,975
887	Argon Manfld 12		2/59	592

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

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<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
888	Horiz Plate Filt	00013005	2/59	868
889	Drying Oven		2/59	210
891	16 X 24 Roll Guide		2/59	3,780
892	Zyglo Insp Unit	OMZ59056	2/59	4,115
893	10 KW Recir Oven		2/59	1,501
895	Hi Freq Furnace		9/59	19,724
896	Table Balance		2/59	112
897	Mark II Recorder	00000441	2/59	1,420
898	Contour Bandsaw	13459356	2/59	1,097
899	Dew Pointer	00004049	2/59	410
900	Dew Pointer	00004047	2/59	422
901	36 Vernier Calip		10/57	189
902	Bl Gr Surf Plate	24x72x10	10/57	703
905	Power Shear	A1843657	1/58	14,916
906	Force Air El Fur	00094234	10/57	15,116
908	Pipe Bolt Mach		9/57	780
909	Duo Blt Wet Surf		5/59	1,450
911	17x78 Eng Lathe		3/58	7,374
912	Sp Ang Roll Stan		11/57	139
913	Pickle Tanks		11/57	392
915	Holst Beam Trolly		2/58	225
916	Microscope		1/58	823
917	Zer-Hyd-Zon Metr	11505395	2/58	511
919	Shelf Filler		11/57	112
921	Typewriter		7/57	514
922	File Cabinet	Comb Loc	5/56	229
923	Stencil Mach		8/57	271
924	Air Conditioning		11/56	230
925	Elec Adding Mach	1240846C	11/56	388
927	5Kg Scale		7/57	320
928	Analyt Balance	004D2756	5/56	983
929	Analyt Balance		10/56	890
931	Hardness Tester	00005225	5/56	656
933	Abra Cutoff Mach		10/57	618
933A	Abra Cutoff Mach		9/56	9,487
935	Leak Detector	OMS388 8	8/56	4,383
936	Gas Purifier	00000477	4/56	365
937	Water Still		8/57	423
939	Inclin Press 5 HP	00H44403	3/56	5,221
938	Inclin Press 5 HP		8/57	4,191
940	Turret Mill Mach	OBR30126	9/56	2,567
941	Ram TY Vert Mill		5/57	2,317
942	Hor Mill Grind	0456PSE7	11/57	14,605
942A	Hor Mill Grind	0456PSE7	10/58	22,382
942B	Milling Head		11/65	530
943	Air Press W Head		7/57	1,798
943A	Auto Number Head		11/61	519

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
945	Drill Press		3/57	3,934
946	Drill Press		10/56	1,863
947	Mill Mach		10/56	78
947A	Mill Mach		10/57	14,787
948	Hyd Press	00005168	9/56	6,690
949	Elec Recir Oven	00009440	4/56	1,516
950	Hood Table		3/56	547
952	Hood Table		3/56	204
953	Scale	00005954	3/56	179
954	Vacuum Pump	00008291	10/56	1,533
955	14x42 TLRm Lathe	8967H748	5/56	8,643
956	Surface Grinder	38 56626	6/56	6,898
957	Bandsaw	050 5630	7/56	3,213
958	Electric Grinder		12/56	188
959	C Ir Surface Plate	12x36	4/56	248
960	Elec Box Furnace	00009441	3/56	3,858
961	Water Cooler	D266457B	4/56	163
962	Press Brake	00032671	2/56	13,654
963	Ind Fluoroscope		3/56	7,950
964	Toggle Ft Press		4/56	197
965	Power Sq Shear	000Q7425	2/56	15,068
966	Roll Feed Straig	00186057	5/56	3,854
967	Salt Bath Furnace		5/57	19,400
968	Rolling Mill		3/57	35,182
968A	Convert Roll Mill		8/60	3,750
969	Arbor Press		6/56	695
970	Recond Roll Mill		8/56	2,285
970A	Rolls for Mill		3/57	1,288
970B	12x16 Roll Mill		11/54	15,289
971	Elec Box Furnace	003082 2	9/56	2,241
975	Dust Collect		9/56	204
976	Diarco Shear		12/56	323
978	Exh Hd Chem Clean		9/57	2,224
979	Lab Bench		3/57	144
980	Rotary Table		10/56	290
982	Dust Collector		5/56	204
983	2000Lb El Hoist		4/56	241
984	SS Vac Ind Furn		6/57	10,861
985	Profilo-Amplimir		3/58	1,058
986	Polishing Press		3/58	1,570
987	Adding Mach	00574572	3/58	364
988	Ultra Generator		10/52	1,390
989	14x40 Lathe		6/58	3,214

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
990	Rolling Mill		8/58	176,140
990A	Rolls for Roll Mill		8/60	2,819
990B	Transform 300 Kva	Bldg 9	4/58	2,100
991	Drill Press	01216 41	4/58	242
992	Vert Horiz Mill	00000827	6/58	4,682
994	SS 3 Zone Furnace	AT181372	6/58	3,634
995	Work Bench		4/58	118
996	Work Bench		4/58	118
997	Work Bench		4/58	118
998	Metallograph		4/58	1,201
999	Elec Furnace	AT211396	6/58	5,645
1000	Borescope	00007430	5/58	315
1001	HFSG Arc Welder	0022525H	3/56	1,532
1002	HF GW Arc Welder		8/57	2,218
1003	Port Scale	00010202	10/56	792
1004	Area Survey Eq		6/58	523
1005	Work Bench		5/58	159
1006	Work Bench		5/58	159
1007	Work Bench		5/58	159
1008	Work Bench		5/58	159
1009	Gage Blocks		5/58	498
1010	Typewriter	11695866	6/58	514
1011	Fume Hood Assembly		6/58	472
1012	Hyd Lift Table	000DT168	6/58	338
1013	Work Bench		7/58	116
1014	Work Bench		7/58	116
1015	Work Bench		7/58	116
1016	Work Bench		7/58	116
1017	Work Bench		7/58	116
1018	Work Bench		7/58	116
1019	Work Bench		7/58	116
1020	Work Bench		7/58	247
1021	Work Bench		7/58	247
1022	Work Bench		7/58	190
1023	Fume Hood Assembly		6/58	1,030
1024	Storage Cabinet		6/58	116
1025	Wall Table Assy		6/58	680
1026	Table Balance		6/58	130
1027	Power Sweeper		7/58	750
1028	20 Double Locker	01028 35	8/58	551
1036	Calculator	728945	5/60	737
1037	Adding Mach	01197954	5/56	504
1038	Adding Mach	01190303	5/56	504
1039	Duplicator		8/56	730

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
1040	Typewriter	05006041	7/53	174
1041	Comptometer	01120111	7/53	763
1042	Fireproof Safe	00373313	1/54	640
1045	Battery Charger	A347062	7/56	450
1046	Air Compressor	00157584	8/56	595
1046A	Instal Air Comp		3/57	301
1047	Instrument Table		10/58	117
1048	Cabinet Bench		2/57	237
1049	Cabinet Bench		5/57	190
1051	Engravograph	00213 32	8/56	525
1052	Manual Elevator		9/56	210
1054	2 Sect Bookcase		8/58	163
1055	Bookcase		8/58	117
1056	Work Bench		9/58	150
1057	Bench Center		9/58	549
1058	Steel Bench		9/58	399
1059	Port Lift Table		9/58	1,119
1060	Table Balance		10/58	112
1061	Bl Gr Surf Plate	000S1167	10/58	1,420
1062	Desk		4/59	177
1063	File Cabinet		10/58	116
1064	File Cabinet		10/58	116
1068	Rot Swaging Mach		12/58	5,385
1070	Spray Booth		10/58	385
1070A	Spray Booth Inst		2/59	677
1071	Desk		4/59	177
1074	Hood F Cutoff Machine		10/59	524
1074A	Cutoff Mach 1010		7/56	705
1075	Wall Table		3/56	311
1076	Combust Cabinet		9/56	132
1077	Cabinet Bench		10/56	169
1078	File Cabinet		8/57	75
1079	Bench Cabinet		5/57	190
1080	Combust Cabinet		9/56	132
1081	Sheet Metal Rack		7/56	173
1082	SS Tank 48x12x12		9/57	91
1083	Reflectoscope	00060747	12/59	1,500
1083A	Reflectoscope	00060747	6/56	5,700
1083B	6 SS Tanks		9/57	2,834
1083C	SS Tank W Trandu		12/59	468
1083D	Anodizing Equip		8/60	1,505
1084	Elevating Table		3/56	216
1085	Bench Cabinet		12/56	209
1086	Add A Tank Sys		4/57	242
1087	Fork Lift Truck	JF6566	7/56	3,959

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
1088	Port Potentiomtr		3/56	226
1089	Vent for Degreas		7/56	337
1090	18 in Height Gauge		4/56	165
1091	Scott Air Pack	0600084A	11/56	207
1092	Blueprint Cabinet		6/56	85
1093	Optical Pyrometr	01195130	9/56	459
1094	Optical Pyrometr	00012632	3/56	214
1095	Retort Carriage		10/56	450
1095A	Hood for Furnace		4/59	320
1095B	Hi Temp Furnace	00090399	11/55	9,061
1096	Capacitrol	00650001	4/56	206
1097	Hydrogen Manifold		12/56	1,085
1098	Twin Shell Blend		4/56	357
1099	Hyd Die Table		4/57	220
1101	Comparator		2/59	335
1102	Pump 14 O2B		2/59	327
1103	Pump 14 O2B		2/59	328
1104	Hyd Press		2/59	1,140
1105	120 x 36 x 36 Degreaser	00005363	2/59	2,698
1106	Cabinet		2/59	101
1107	Cabinet		2/59	101
1108	Cabinet		2/59	101
1109	Cabinet		2/59	101
1110	Cabinet		2/59	101
1111	Cabinet		2/59	101
1112	Cabinet		2/59	101
1113	Lab Scale		2/59	364
1114	Type Desk		3/59	245
1115	File Cabinet		3/59	116
1116	Bookcase		3/59	117
1117	60x30 Desk		3/59	259
1118	60x30 Desk		3/59	177
1119	File Cabinet		3/59	116
1120	Type Desk 60x30		3/59	245
1121	Desk		3/59	259
1123	Dresser 1 Diamnd		2/59	516
1124	Hor Tube Furnace		3/59	15,871
1125	Hor Tube Furnace	MCL2772C	3/59	15,381
1125A	Inconel Retort		8/60	2,975
1126	Plumb Eq Pres Vs		6/59	786
1126A	Isostatic Bldg		5/59	12,971
1126B	Argon Manifold		6/59	790
1126C	Furnace Isostat		6/59	920
1126D	Power Supply		8/59	2,966
1100	Motor Gen Set	00005569	4/56	25,514

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
1126E	Panel Board		6/59	4,060
1126F	Compressor		6/59	7,690
1126G	Reactor		6/59	25,282
1127	Exec Post Chair		3/59	109
1129	Exec Chair		3/59	109
1130	Ozalid	000RW981	4/59	3,627
1131	Desk		1/59	177
1132	Storage Vault		2/59	3,291
1132A	Type Desk		4/59	243
1133	Desk		4/59	177
1134	Desk		4/59	177
1135	Desk		4/59	177
1136	Hyd Lift Table		3/59	1,120
1137	Microscope		3/59	361
1138	Air Cool Exten		4/59	224
1138A	Exec Chair		3/59	109
1139	Scale	00087249	3/59	480
1140	Rod Straightener	00005221	3/59	6,972
1141	Port Crane Hyd		3/59	331
1144	Credenza		4/59	112
1145	Desk		1/59	177
1146	Desk		11/58	177
1147	Desk		11/58	177
1149	Type Desk		4/59	243
1150	Surf Plate 24x48		4/59	511
1151	Drum Heater 7 Kw		4/59	512
1152	9 in Exh System	00Bldg 9	4/59	1,125
1153	Work Bench		4/59	121
1154	Work Bench		4/59	121
1155	Work Bench		4/59	121
1156	Work Bench		4/59	121
1157	Work Bench		4/59	121
1158	Work Bench		4/59	121
1160	Magnatest Meter		1/59	1,895
1161	Vac Retort	00096434	8/60	322
1162	Dry Box Welder		4/59	7,197
1163	ThermoFax Copier	00393095	4/59	299
1164	Air Blast Cl Cab		4/59	1,691
1165	Floor Waxer 16 in		4/59	322
1166	Cutoff Mach		6/59	1,385
1167	2 Sec 5 Shelf Rack		4/59	997
1168	Desk		4/59	259
1169	Desk		4/59	259
1170	Work Bench		5/59	100

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
1171	Work Bench		5/59	100
1172	Height Gauge		5/59	319
1174	Capacitrol	09500625	5/59	199
1175	5x8 Kardex		7/59	152
1176	Typewriter	01240226	4/60	472
1177	Type Desk		5/59	240
1178	Type Desk		5/59	240
1179	Type Desk		5/59	240
1180	Credenza		5/59	108
1181	Oil Mist Precipi	00025386	6/59	1,484
1182	Oil Mist Precipi	00025387	6/59	1,485
1183	Oil Mist Precipi	00025388	6/59	1,484
1184	Oil Mist Precipi	00025389	6/59	1,485
1185	55 ft Glass Part		5/59	1,108
1186	60 x 30 Desk		5/59	173
1187	60 x 30 Desk		5/59	173
1188	Bookcase		5/59	115
1189	4 File Cabinets	1189 92	5/59	455
1193	Credenza		5/59	108
1199	Chair		9/59	117
1200	Chair		9/59	117
1202	Chair		9/59	106
1203	Chair		9/59	106
1204	Chair		9/59	106
1207	Exec Chair		11/59	109
1208	Exec Chair		11/59	109
1209	Exec Chair		11/59	109
1210	Spot Weld Mach	00007365	4/59	4,008
1212	Prec Bench Lathe	00015967	4/59	441
1213	Hor Vert Machine		3/59	6,950
1214	Steel F Stair	Bldg 9	3/59	390
1215	Intrimik Set		4/59	252
1216	Rectifier 50 Amp	00009 45	4/59	240
1217	Vacuum Chuck		3/59	444
1218	Demineralizer		3/59	230
1219	Alpha Vac Gauge		3/59	575
1220	12x8 Booth		9/59	1,592
1221	10x8 Booth		3/59	1,488
1222	10x8 Booth		3/59	1,488
1223	10 Double Locker	01223 32	3/59	787
1233	Vernier 48 in		3/59	328
1234	Potentiometer		3/59	309
1235	Frame Truck		3/59	166
1236	Frame Truck		3/59	166
1237	Frame Truck		3/59	166

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

Asset No.	Description	Serial No.	Purch. Date	First Cost
1238	Frame Truck		3/59	166
1239	Cabinet Bench		3/59	161
1240	Wire Partition	Bldg 9	2/59	755
1242	300 Lb Scale	00087250	3/59	1,009
1243	Dry Box Weld		7/59	37,156
1244	Elec Vert Furnace		4/59	4,225
1245	Oil Mist Precipi	00024495	3/59	1,580
1246	Oil Mist Precipi	00024186	3/59	1,561
1248	Shelvin Units		3/59	355
1249	Carbide Tl Grind	00009451	5/59	593
1250	Duplicate Mach	00005107	5/59	676
1251	Room Conditioner	08305757	5/59	492
1252	Surf Plate Bl Gr	00024x36	6/59	335
1253	Surf Plate Bl Gr	00024x36	6/59	335
1254	Water Cooler		5/59	163
1255	Water Cooler		5/59	163
1256	Welder		5/59	427
1257	20 Shelve Units		5/59	579
1258	Scan Device		6/59	1,377
1259	Desk		7/59	173
1260	Desk		7/59	173
1261	Desk		7/59	173
1262	Desk		7/59	173
1263	Desk		7/53	173
1267	Work Bench		5/59	134
1268	Glass Stor Cabnt		5/59	133
1269	2 Utility Tables		5/59	392
1270	Shear Blade	A1843657	5/59	330
1271	Inert Gas Purifi		5/59	2,422
1272	Starrett Squares		5/59	265
1273	Work Bench		5/59	134
1274	Water Gap Tool		5/59	508
1275	Wire Partition	Bldg 9	5/59	520
1276	Weld Shave		5/59	544
1277	Blueprint File		5/59	294
1278	Remote Monitor	900-112	3/60	19,286
1279	Storage Cabinet		5/59	108
1280	Storage Cabinet		5/59	108
1281	Typewriter	00033743	6/59	189
1282	Spray Booth 5x7	5K43JG2A	6/59	1,045
1283	Desk		7/59	173
1284	Desk		9/59	173
1286	Desk		7/59	239
1287	12x96 Mill Mach		7/59	4,457
1288	16x24 Iron Rolls		8/59	2,132
1289	30 Amp Power Sup	00000G97	8/59	238
1292	Lab Monitor	00027784	8/59	380
1293	Lab Monitor	00027790	8/59	380

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
1295	Indicate & Recordr		6/59	1,421
1296	Rolling Mill	0004 121	3/60	37,429
1297	Zip Lift Hoist		8/59	639
1298	Typewriter	41029729	8/59	359
1300	Desk		10/59	240
1301	Type Stand		10/59	67
1301A	Desk		10/59	173
1301B	Posture Chair		10/59	110
1302	4 File Cab	01317 19	10/59	455
1304	Turbine Pump	02839069	8/59	873
1306	Leak Tester		12/59	3,685
1307	5 Ex Post Chair	01307 11	11/59	544
1312	2 Ex Post Chair	01312 13	3/60	212
1315	Jr. Exec Chair		9/59	117
1316	Chair		9/59	117
1321	Combustion Furn	10 467 2	6/59	859
1322	12 in Sander	00000653	10/59	2,170
1323	Induction Coil		1/60	755
1324	Water Cooler	00084082	10/59	173
1326	Desk		10/59	240
1337	Stacormatic Tabl	00000360	11/59	309
1328	Stacormatic Tabl	00000360	11/59	309
1329	Draft Mach	00001370	11/59	126
1330	Scaler-Ratemeter		12/59	650
1331	Alpha Flow Count		12/59	700
1332	Alpha Counter		12/59	547
1332A	Set up System		3/60	254
1333	2 Alpha Detectors		11/59	503
1334	Typewriter Pica	00050515	9/59	200
1337	Posting File		9/59	250
1338	Storage Cabinet		9/59	129
1339	Storage Cabinet		9/59	129
1340	Storage Cabinet		9/59	129
1341	15 Lockers		9/59	426
1342	Saw		9/59	575
1345	Potentiometer		12/59	1,189
1346	Set 17x24 Rolls		12/59	1,300
1347	Pallet Rack		12/59	1,541
1348	Pallet Rack		12/59	1,540
1349	Xray Cabinet	012242 0	3/60	1,350
1350	Xray Apparatus	MGL50 8	3/60	2,215
1350A	Xray Mach		3/64	3,433
1351	Radiat Survey Mt		4/60	301
1352	Metalize Gun		8/59	1,242
1354	Platform Scale	003000Lb	1/60	768
1355	Hyd Pallet Truck		1/60	610

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
1356	Tab Card File		2/60	246
1357	Inspect Sine Pit		12/59	367
1358	Analy Balance	00035499	12/59	895
1359	Welder	OH155292	8/60	2,399
1361	Time Amp Control	00001469	2/60	400
1362	Band Saw W Cool		8/60	452
1363	Band Saw W Cool	000LK890	8/60	1,182
1364	Shelving 23 Sec		12/59	1,165
1365A	Air Comp		3/60	141
1366	Shelf Cabinet	Bldg 9	1/60	528
1368	Shelf Cabinet	Bldg 9	1/60	528
1369	Storage Racks 17		12/59	512
1370	Time Recorder		4/60	405
1371	Alpha Counter	00000898	1/60	576
1372	Alarm		12/59	1,435
1373	Show Case		1/60	265
1374	Half Pan Show Ca		1/60	105
1375	Preamplifier		11/59	85
1376	Preamplifier		11/59	85
1377	Box A Pan Brake	00090100	10/59	495
1378	Spot Welder	00024302	10/59	371
1379	Spot Weld W Time	00068415	10/59	412
1381A	Blueprint File		2/60	139
1382	Furn For Wormell		11/59	550
1385	Arc Melt Furnace		6/60	2,109
1386	Potentiometer	01556946	5/60	330
1389	Perm Control Panl		7/59	110
1390	Temp Control Panl		7/59	110
1391	Post Meter Stamp		6/60	219
1395	Time Recorder		5/60	405
1396	Tier Lockers		10/59	169
1397	Monorail System		2/60	1,093
1400	Balance	00072187	10/59	560
1401	Conference Table		12/59	118
1404	10 Chairs	01404 13	12/59	1,136
1420	Primary Power Su		6/57	22,043
1425	Wet Polisher		6/46	170
1428	Gas Shed		6/59	7,914
1432	Function Fit Fix		11/60	979
1432A	Dovetail St Edge	000200 6	10/60	223
1433	Ultrasonic Test		12/60	1,822
1433A	Ultra Test Equip		4/61	811
38389A	Dictate Mach	00062282	1/60	376
55423	Ther Fax Copier	00218544	12/58	429
71921	Mettler Balance		5/61	1,510

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

Asset No.	Description	Serial No.	Purch. Date	First Cost
71924	Punch Press OBI	79261380	12/61	625
71924A	Press Contrl Set		4/62	165
71925	E-Z Baler		1/62	240
71927	Element Analyzer		6/62	4,125
71927A	Gammer Scanner		3/64	11,770
71928	Surf Plate W Std		7/62	435
71929	Channel Gage	00000077	9/62	761
71930	Auto Weld Unit		10/62	2,993
71930A	Used Weld Unit		1/63	32
71931	Calculator	00646741	12/62	933
71932	Calculator	00935806	12/62	1,007
71933	Balance	00054463	11/62	1,530
71934	Used Roll Leveler		12/62	3,316
71935	Vernier Caliper		11/62	279
71936	Depth Gage	33-19-14	12/62	281
71937	Used OBI Press	47485905	12/62	1,489
71938	Surface Plate		1/63	435
71939	Densitometer	00007827	12/62	555
71940	Print Calculator	00115857	1/63	800
71941	Engravograph		1/63	685
71942	Hardness Tester		1/63	633
71952	Air Conditioner	03238362	3/64	224
71966	Vacuum Cleaner	00071991	4/64	493
71968	Power Pack		10/58	2,250
71969	Power Pack		10/58	2,250
71974	Potentiometer	00032372	10/64	255
71975	Run Up Box	00032354	10/64	55
71976	Used Draw Bench		4/65	2,595
71977	Used Milling Machine		4/65	1,473
71978	Used Ultrasonic Eqpt		4/65	11,649
71979	Used Roll Swage Mach		11/64	4,535
71980	Auto Dryphoto Copier	BA05293B	10/64	1,495
71981	Sieve Shaker		11/64	599
71987	Twin Shell Blender		12/64	995
71988	Fluoroscope Box		4/65	5,475
71989	Semi-Auto Water Gage		5/65	5,685
71990	Miget Welding Gun	2351-611	2/65	2,087
71991	Deburring Machine	00026553	3/65	1,285
71993	Film Processor	00001079	9/65	7,752
71995	Magnatest	00641294	10/65	895
71999	Snow Blower		12/65	220
72000	Metallograph		12/65	2,632
86401	Shearing Fixture		12/65	686
* 86401A	Shearing Fixture		2/66	715
* 86401B	Shearing Fixture		2/66	348

* These items added since 1/1/66

71957

NUCLEAR FUEL EQUIPMENT LISTING
As of April 1966

<u>Asset No.</u>	<u>Description</u>	<u>Serial No.</u>	<u>Purch. Date</u>	<u>First Cost</u>
<u>Added Since 1/1/66</u>				
86412	Generator 1200 Watts		3/66	1,164
86416	Automatic Numbering Head		3/66	652
<u>Carried In Unfinished Plant</u>				
1349/50	Modification X-ray Cabinet			3,779
71996	Lead Lined Anodizing Tank			1,593
71998	Fabrication Mobile Fluoroscope Mach			4,113
86402/8 inc and 86410	Eight Stainless Steel Tanks			1,524
GRAND TOTAL				<u>\$1,387,987</u>

APR 19 1958

APR 19 1958

EXHIBIT B

SYLOR U.S. PATENTS AND APPLICATIONS

<u>Docket #</u>	<u>Title</u>	<u>Serial # or Patent #</u>	<u>Filing Date</u>	<u>Issuance Date</u>
22	Nuclear Reactor Fuel Element Comprising A Plurality of Concentric Cylinders	S. 713,734 P.3,074,073	2/6/58	1/22/63
35	Swage Plate	S. 768,931 P.3,074,299	10/22/58	1/22/63
36	Reactor Fuel Plate Assembly and Method	S. 769,009 P.2,981,669	10/22/58	4/25/61
37	Nuclear Fuel Assembly Locking Joint and Method	S. 768,901 P.2,981,673	10/22/58	4/25/61
42	Nuclear Fuel Element and Method of Manufacture	S. 785,874 P.3,028,326	1/9/59	4/3/62
51	Nuclear Fuel Element Assembly and Method of Fabricating Same	S. 801,038 P.3,087,878	3/23/59	4/30/63
64	Method for Casting Side Supporting Plates Onto the Edges of Spaced Nuclear Fuel Plates	S. 842,639 P.3,020,222	9/28/59	2/6/62
28	Method for Producing High Density Uranium Oxide	S. 18,292 P.3,094,377	3/29/60	3/18/63
47	Mechanical Fixture for Bonding Tubular Elements	S. 841,819 P.3,050,613	9/23/59	8/21/62
49	Apparatus for Determining Radioactive Material Ratios	S. 801,566 P.3,086,116	3/24/59	4/16/63
67	Nuclear Fuel Plate and Process for Making Same	S. 52,805 P.3,071,526	6/30/60	1/-/63
65	Internally Strengthened Felt Fuel Plate	S. 48,971 P.3,197,382	8/11/60	7/27/63
1	Multi-Element Tubes and Processes of Assembly	S. 52,450 P.3,222,773	8/21/60	12/14/63

EXHIBIT C

EQUIPMENT

CORE MAKING

TO BE MADE AVAILABLE
DURING THE WK. OF

1139	Sauter Balance	8/26
71921	Mettler Balance	8/26
71927	Gamma Scanner	8/26
71931	Friden Calculator	8/26

FUEL ELEMENTS - MFG.

957	Do-All Saw (Tool Room)	9/12
1287	Mechanical Assembly Machine	"
71989	Water Gap Gage	"
1002	Welder	"
1001	Welder	"
942	Cincinnati Miller	"
941	Bridgeport Miller	"
827	K & T Miller	"
19	Drill Press	"
1150	Surface Plate	"
X10	Tool Grinder	"
71941	Engraver	"
1212	Hardage - Small Lathe - Tool Room	"
none	Cleaning Tanks	9/19
1087	Fork-lift truck	9/19
1045	Charger	9/19
1046	Air Compressor	9/12
(1213)		
or	VSR - Tool Room	9/12
(4243)		
989	Hercules Lathe (Tool Room)	"
911	LeBlond Lathe	"
478	Do-All Grinder (Tool Room)	"
945	Drill Press	"
5	Surface Plate (shop)	"
none	Surface Plate (Tool Room)	"
944	Sander	"

FUEL ELEMENTS - Q. C.

902	Surface Plate	9/12
1061	Surface Plate	"
916	Zeiss Microscope	"

EQUIPMENT

<u>MAINTENANCE EQUIPMENT</u>		<u>TO BE MADE AVAILABLE DURING THE WK. OF</u>
1362	Kalamazoo - Power Saw	9/19
none	Drill Press (Maint. Sect.)	"
none	Gas Welding Set	"
1256	Welder	"

SAFETY EQUIPMENT

Sylvania to retain until week of 9/26/66 necessary counters, etc. to complete "evacuation" of building.

MET. LAB EQUIPMENT

Sufficient equipment to control final MTR fabrication kept until 8/26/66.

EXHIBIT D

SYLOR WARRANTY RESPONSIBILITIES

<u>Customer</u>	<u>Contract or P. O. No.</u>	<u>No. of Elements Warranted</u>		<u>Warranty Provision</u>
			<u>2%</u>	
G. E.	205-79995N	68	1	18 Mo. after Delivery
G. E.	205-V9000N	140	3	"
U. of Calif.	4634603	50	1	1 Yr. after Acceptance
Sweden	8-20-64	90	2	18 Mo. after Delivery
Sweden	8-53748) 12-15-65) 3-15-66)	59	1	"
C. E. N.	8-8-65	60	1	"
AMF	11-19-64	31	1	"
Israel	9-22-65	10	1	"
Phillips	C-259	125	3	180 days after Delivery
Phillips	C-270	180 12	3 1	"
Brookhaven	9-1-64	1221	24	1 Yr. after Receipt
Brookhaven	2-24-66	925	19	"
Ames	A6-1482	63	1	18 Mo. after Delivery

70. ^{to}
Please attach
to contract
BCL

SYLVANIA ELECTRIC PRODUCTS INC.
A SUBSIDIARY OF
GENERAL TELEPHONE & ELECTRONICS CORPORATION
730 THIRD AVENUE, NEW YORK 17, N. Y.

LAW DEPARTMENT

June 23, 1966

Mr. A. Stewart
National Lead Company
Nuclear Metals Division
1130 Central Avenue
Albany, New York

Re: Sylvania - National Lead Agreement

Dear Mr. Stewart:

In connection with the execution of the Agreement between Sylvania Electric Products Inc. and National Lead Company dated June 10, 1966, you will recall that there were two items of clarification of said Agreement which we agreed to confirm at a later date in writing. Pursuant to our discussions, therefore, I have set forth below these matters for your review and confirmation.

- (a) With respect to any of the documents contemplated in Article IV, Paragraph 4.1 (b), Sylvania's obligation to transfer any such document would be subject to the restriction specified in Article I, namely, "It shall not include information..... which, as a result of restrictions imposed by the United States Government, or its agents; including but not limited to the Atomic Energy Commission, cannot be disclosed to third parties".
- (b) With respect to Article V, Paragraph 5.1, it is understood that the know-how referenced therein to be transferred, is comprised solely of the documents referenced in Paragraph 4.1 (b) of Article IV.

If you are in agreement with the aforementioned, would you be kind enough to sign the extra copy of this letter where indicated, and return it directly to me.

Very truly yours,

BC:jh

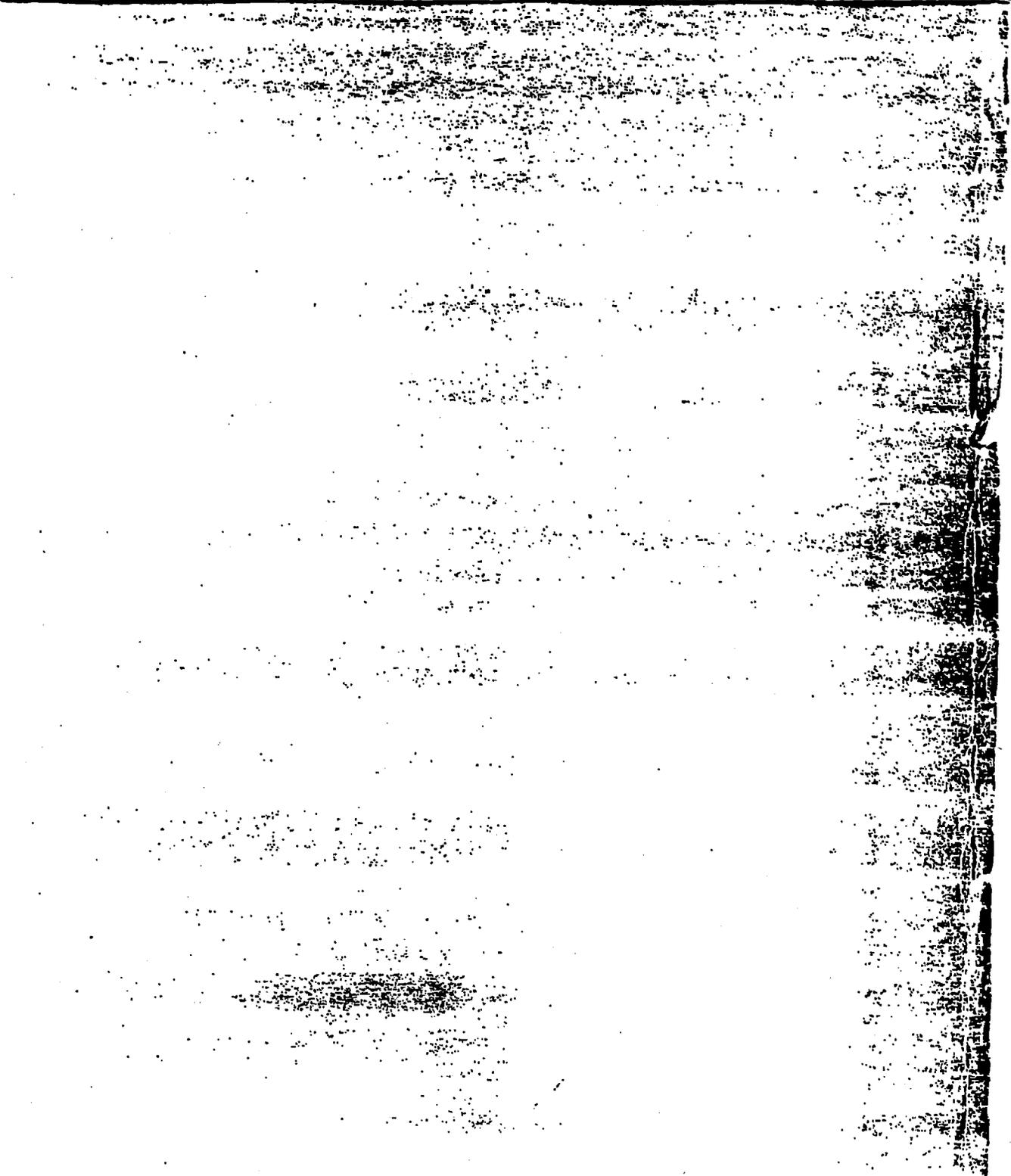
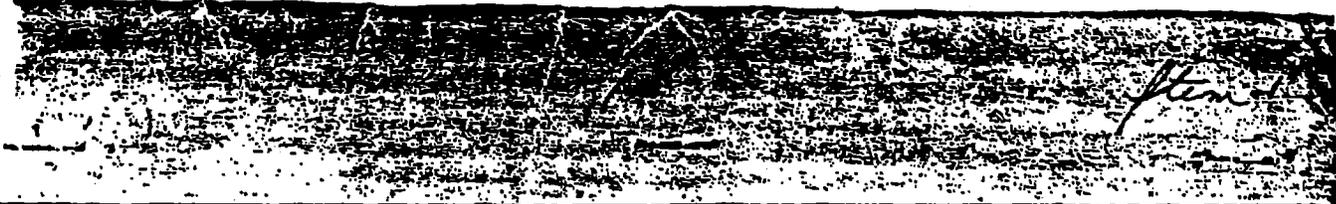
ACCEPTED: NATIONAL LEAD COMPANY

Ernest Carswell
Senior Division Counsel

BY: 

DATE: June 29, 1966

SYL00000632



Item 2

SYLCOR CLOSING

SYLVANIA ELECTRIC PRODUCTS INC., (SYLVANIA)

and

NATIONAL LEAD COMPANY, (NATIONAL)

The closing took place on Friday, August 26, 1966 at National's offices, 111 Broadway, New York City, New York.

Present were:

J. J. Lawler	-	Attorney for National Lead
Bruce Carswell	-	Attorney for Sylvania
Dennis Ryan	-	Attorney for Sylvania
William Mandaro	-	Sylvania
William Manser	-	National Lead

Sylvania delivered the following:

1. A Bill of Sale for all equipment and documents that had been shipped to National as of August 24, 1966
2. License Agreement
3. Certified copy of Sylvania's Board Resolution authorizing the sale.
4. A proposed Bill of Sale and Release which would transfer all other equipment and documents and release Sylvania from any further obligations which was to be executed by the parties at such time as they might agree that all equipment and records had in fact been shipped to National. (Such agreement was reached in later March, 1967 and on March 28, 1967 the final Bill of Sale and Release was executed by both parties completing the transaction.)

At the closing meeting in August, National delivered to Sylvania:

1. A check in the amount of \$500,000.00.
2. A Certified copy of National's Board Resolution authorizing the purchase.

The only matter thus outstanding is the question of the Bulk Transfer Tax under the New York Act. Under paragraph 9.1 of the Agreement of Purchase dated June 10, 1966 between Sylvania and National, National is obligated to pay any

such tax imposed. However, under the State Act, Sylvania, as seller, is required to collect the tax and pay it to the State. Dennis Ryan will undertake to meet with National and the State Tax Bureau in an effort to establish the tax which is to be imposed and to collect the same from National for payment to the State.

Item 4

LICENSE AGREEMENT

Agreement made as of August 26, 1966 by and between Sylvania Electric Products Inc. ("SYLVANIA"), a Delaware corporation, having its executive offices at 730 Third Avenue, New York, New York, and National Lead Company ("NATIONAL"), a New Jersey corporation, having its executive offices at 111 Broadway, New York, New York.

WHEREAS, NATIONAL has agreed to purchase certain assets of SYLVANIA in an Agreement between the parties dated June 10, 1966; and

WHEREAS, SYLVANIA has agreed to grant to NATIONAL a non-exclusive license under certain SYLVANIA patents; and

WHEREAS, the parties hereto desire to confirm the grant of said license in a separate instrument;

NOW, THEREFORE, in consideration of the mutual covenants contained in said Agreement dated June 10, 1966, and for other valuable considerations, it is hereby agreed by and between SYLVANIA and NATIONAL as follows:

ARTICLE I

DEFINITIONS

1. "Nuclear Field" as used in this Agreement shall mean "Nuclear Field" as defined in the Agreement dated June 10, 1966.
2. "Licensed Patents" as used in this Agreement shall mean SYLVANIA's United States patents listed in Exhibit B of the Agreement dated June 10, 1966 and attached thereto.

ARTICLE II

LICENSE GRANT

SYLVANIA grants to NATIONAL a non-exclusive, non-assignable and indivisible license under Licensed Patents to make, or have made for

it, use, lease or sell in the Nuclear Field for the life of the licensed patents. It is understood that NATIONAL shall not have the right to grant sublicense under this Agreement.

ARTICLE III

NON-ASSERTION OF OTHER PATENTS

SYLVANIA shall not assert against NATIONAL any patents issued to SYLVANIA from applications pending on or before the date of this License Agreement in the Nuclear Field by reason of the manufacture by NATIONAL of products in the Nuclear Field, nor will SYLVANIA assert such patents against any customer of NATIONAL based upon use or sale of products purchased from NATIONAL in the Nuclear Field.

ARTICLE IV

CONSTRUCTION

This instrument shall be deemed to be a New York contract subject to interpretation in accordance with the laws of New York State.

ARTICLE V

ENTIRETY

This Agreement shall be binding upon the parties hereto and their successors. This Agreement shall not be assigned in whole or in part, either directly or indirectly, by either party, without the written consent of the other party hereto in each case first had and obtained.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed as of the day and year first above written.

SYLVANIA ELECTRIC PRODUCTS INC.

By S/ George L. Mason
VICE PRESIDENT

AGENT:

W. F. Viregg
SECRETARY

NATIONAL LEAD COMPANY

By James Mac Guffie
VICE PRESIDENT

AGENT:

J. J. Lawen
SECRETARY

Item 3.

BILL OF SALE

KNOW ALL MEN BY THESE PRESENTS: That SYLVANIA ELECTRIC PRODUCTS INC., a Delaware corporation, having offices at 730 Third Avenue, New York, New York, the party of the first part, for and in consideration of the sum of Ten Dollars and other valuable consideration, lawful money of the United States of America, to it in hand paid by NATIONAL LEAD COMPANY, a New Jersey corporation, having offices at 111 Broadway, New York, New York, the party of the second part, the receipt whereof is hereby acknowledged, does by these presents, grant, bargain, sell and deliver unto the said party of the second part, the following described personal property heretofore located at SYLVANIA'S plant on Cantigue Road, Hicksville, New York, to-wit:

The equipment, machinery, tooling, dies, jigs, appliances, trucks, furniture, fixtures and supplies described in Exhibit A attached hereto and made a part hereof,

TO HAVE AND TO HOLD the same to the said party of the second part, and assigns forever. And the said party of the first part, covenants and agrees to and with the said party of the second part, and assigns, that the said party of the first part is the owner of the said property, goods and chattels and has good right and full authority to sell the same, and that it will warrant and defend the sale hereby made unto the said party of the second part, and assigns, against all and every person or persons, whomsoever, lawfully claiming or to claim the same.

IN WITNESS WHEREOF, said corporation has caused this instrument to be executed by its proper officers and its corporate seal to be hereunto affixed this 26th day of August, 1966.

SILVANIA ELECTRIC PRODUCTS INC.

By Douglas L. Hamilton

Vice President

STATE OF NEW YORK }
COUNTY OF NEW YORK } ss.:

On the 26th day of August, 1966, before me personally came DOUGLAS L. HAMILTON to me known, who, being duly sworn, did depose and say that he resides at SEARSDALE NEW YORK that he is the VICE PRESIDENT - FINANCE of SILVANIA ELECTRIC PRODUCTS INC., the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation, and that the seal affixed to said instrument is such corporate seal.

JULIA M. TOOPER

EXHIBIT A

SC 01203 July 1, 1966
American Freightway

- 1 Bridgeport Milling Machine, Ser # 4-1706
- Sylcor Tag #453
- With: "J" Head
- 4 - Collets, 1/8, 5/16, 1/2 & 9/16
- 1 - 1/2 Jacobs Chuck

SC 01215 July 21, 1966
Hand carried by G. Ladd for NLO

- 6 Grey Shirts
- 6 Grey Pants
- 6 Coveralls

SC 01210 July 15, 1966
Contents for Trailer #442 - American Freightways

- 5 Metal Desks Nos. 1121, 1132, 1259, 1262, 182
- 1 Metal Table
- 3 Wooden Tables
- 3 Book Cases Nos. 1188, 185, 1 Unnumbered
- 2 Drafting Tables Nos. 1383, 1384
- 9 Chairs
- 1 2-Drawer File Cabinet
- 1 Carton of Lamps
- 6 Cartons of miscellaneous Books
- 1 Metal container (coffin) Engineering Books
- 2 Storage Racks
- 1 Skid Furnace Control #1124 and 1125
- 1 Skid Vacuum Retorts 1124-1125-1 spare retorts-4 rails
for Furnaces
- 1 Hydraulic Rucker Draw Bench W/Lub, pump & tank
- 1 Midget Welder
- 1 Sintering Furnace #1095 (1 of 4)
- 1 Skid Miscellaneous Dies (Power) Gas Mold
- 2 Pin Furnace Hevi-Duty #1124-1125
- 1 Roof for Control Area Racks C5
- 3 Metal Racks for above C5
- 2 Powder Weighing Booths with enclosed Hoods and Glass Tops
#1060 & #896
- 1 Skid Rotap Tyler Machine #71981
- 1 Skid Dry Box Powder Weighing
- 1 Metal sheet roof for Cleaning Room Racks
- 1 Bauer Safety Edges #71991

SC 01214 July 21, 1966
Contents of trailer #402, Seal #5285 - American Freightways

- 2 Skids Exhaust Hoods & Tables #s - X-3, X-4, X-5, X-6
- 1 Sheet Metal Roof
- 1 Wagon with Hood and Tray #1095
- 1 Roof for Storage Racks
- 3 Closed Core Storage Shelves
- 3 Wall Racks
- 4 Storage Racks
- 1 Closed Sides Storage Racks
- 33 Tote Trays
- 3 Skids of Tote Trays
- 1 Steel Surface Plate and Stand

SC 01214 (continued)

- 1 Angleiron Table on Wheels
- 1 Angleiron Fram for Dry Box
- 2 Wooden Cases Misc. Dies and Welding Fixtures
- 5 Skids Misc. Dies
- 1 Skid Forming Dies
- 3 Skids Die Racks
- 1 Skid Annealing Plates
- 1 Skid Bliss Bed Plate
- 2 Bundles of Fibre boxes (8)
- 11 Bundles of 5-gallon Pails
- 1 Cabinet Sintering Furnace #1095
- 1 Skid Sintering Retorts #s - 1095 and 1125
- 1 Roller Leveler #966
- 1 Roller Leveler #187 Stanat
- 1 Conveyor #962
- 1 Skid X3 Dry Box & 2 Vac. Storage Boxes
- 1 Box Vac. and Open Air Capacitors w/Water hoses #1214
- 1 Box Heating Elements Cooley (Hevi-Duty Pin Furnace)
- 1 Skid Induction Coils for Vac. Melt.
- 1 Skid Vac. Melt Pump #1214
- 1 Skid Vac. Pumps Pin Furnaces #1124 and 1125
- 1 Box Cinn. Milling Machine Head #942
- 1 Box Dividing Head
- 1 Portable Fluoroscope #71998

SC 01217

July 28, 1966

Contents of Youngstown Cartage Co. Flat Bed Trailer - NY
License 145-237

- 1 Cooley Electric Furnace #994
- 1 Cooley Electric Furnace #960
- 1 Cooley Electric Furnace #893
- 1 MTR Generator #1214
- 1 Console for Vacuum Melt #895
- 1 (2pcs) B & J Mill #970 W/Gear Train

SC 01218

July 29, 1966

Contents on Youngstown Cartage Co. Flat Bed Trailer - NY
License #NY80486 Trailer #3506

- 2 United Rollers W/Bearings and Couplings
- 1 Motor From B & J Mill
- 2 Skids #895 Vacuum Vessel W/Mixing Motor Inside and #1214 Part Attached
- 1 Bliss Press & Motor #938
- 1 Phillips Degreaser #977
- 1 Hydraulic Unit & Piping Watson & Stillman #352
- 1 Bliss Press #71937
- 1 Skid Electric Controls for #895
- 1 Skid Outboard Bearing Pedestal
- 1 Skid Furnace #889
- 1 Ram Press Watson & Stillman #352
- 1 Gasher Coolant Pump and Tank for B & J Mill

SC 01219

July 29, 1966

Contents of Youngstown Cartage Co. Flat Bed Trailer - License
#NY 80-484

- 1 Transformer #990
- 2 Transformers #854
- 1 Console, Power Supply #854
- 1 Electro Dryer Unit #878
- 1 Motor-Generator Set #990
- 1 Electrical Panel #990

SC 01222 August 3, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - NY License
117-758

- 1 United Gearbox #990
- 1 United Roll Change Guide #990
- 1 United Roll Change Hydraulic Cylinder #990
- 1 Hevi-Duty Furnace #850
- 1 United Motor, 150 HP #990
- 1 Work Table W/Angle Iron Cutter & Shaper #114

SC 01223 August 3, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - NY License
152-682

- 1 Fenn - Four High Mill #1296
- 1 Fenn - Two High Mill #968
- 1 Cooley Furnace #854
- 1 Elias Press #71924
- 1 Fenn Gear Box and Drive #968

SC 01224 August 3, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - NY License
145-237

- 1 Hevi-Duty Furnace #906
- 1 Blower Assembly & Frame #990
- 1 Motor & Pump Assembly on Common Bed #990
- 1 Cooley Furnace #971
- 1 Motor & Gear Box Assembly, Fenn #1296
- 1 Furnace W/Tap Switches, Hevi-Duty #850
- 1 Sciaky Welder #1210
- 1 Console Panel, Hevi-Duty #850

SC 01226 August 5, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - License NY-
145-237

- 115 Assorted Buss Plugs, From Bldg. #1
- 28 Assorted Buss Ducts, From Bldg. #1
- 2 Short Buss Ducts, From Bldg. #1
- 1 Switchboard Panel, 800 Amps, From Bldg. #1
- 1 400 Amp Switch, From Bldg. #1
- 1 2/Door Fuse Box, From Bldg. #1
- 1 #1059 Elevating Worktable
- 1 #970 C-H Motor Control
- 1 #970 B & J Motor and Blower Assy
- 1 #968 Two-High Fenn Electrical Panel W/Rheostat Attached
- 1 Skid #854 & #906 Instrument Panel
- 1 1100 Dust Collector (Old Melt Room)
- 1 #906 Electrical Panel
- 1 Water Cooler

SC 01225 August 5, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - NY License
117-758

- 4 Skids Spray Booths K.D., Control Area
- 1 Hood #970
- 1 Lot Sheet Metal, Ventilating Stacks, Hoods, Etc.

SC 01230

August 8, 1966

Contents of Youngstown Cartage Co. Flatbed Trailer - NY License
76-824

- 1 Tool Cabinet #x-36
- 1 Skid Instrument Consoles #1243
 - 1 Kinney Vacuum Pump #1243
 - 1 Van Norman Milling Machine #831
 - 1 #943 Numbering Machine W/86416 Jig Attached
 - 1 #990 Hydraulic Unit W/Accumulator
 - 1 Kinney Vacuum Pump #1243
 - 1 Electric Control Panel #971
 - 3 Electric Motors W/Bracket For Spray Booths
 - 1 Temp Recorder & Limitrol #960
 - 1 Mine Dector, Gas Analyzer X-15
 - 1 Retort W/Flange #1243
- 1 Skid Vacuum Manifold W/Hold Pump #1243, Electrical Panel #1244
- 1 Skid #1330 Cabinet, Instrument Inside - #1330 Plate Contam. Check
 - 2 Base, Rails, Holddowns #990
 - 1 Elevating Jacks & Counter Weights #1243
 - 1 Instrument & Electric Panel #1243

SC 01228

August 8, 1966

Contents of Youngstown Cartage Co. Flatbed Trailer - NY License
152-704

- 1 K71934 Voss Roller Leveler
- 1 Swager #1068
- 1 Rod Straightener #1140
- 4 Hydrogen Furnace Boats
- 2 Workbenches W/Stool, X-Ray Viewer
- 1 Workbench #1016
- 1 Track For FM-3 #37V15
- 1 Workbench, X-Ray Viewer
- 2 Workbenches W/2 Tote Trays
- 1 Workbench W/3 Sect. Shelves
- 4 Sections Dry Box Weld (#1243) "Platform" W/Staircase, 9 Legs, 1 Fan, Quenching Tank Chamber and Elevating Cradle

SC 01227

August 8, 1966

F. Occhiograsso

- 1 #71932 Calculator
- 1 #822 Adding Machine
- 1 #823 Adding Machine
- 1 #1298 Electric Typewriter
- 1 Accountability Manual
- 1 Envelope Rubber Stamps

SC 01234

August 9, 1966

Contents of Youngstown Cartage Co. Flatbed Trailer - License NY-
152-700

- 1 Fixture W/Angle Iron Table #1432
- 1 Coolant Pump & Tank & Ducts for United Mill
- 1 Workbench W/Fanco Press & Numbering Press
- 1 #3 Greenard Arbor Press
- 4 Work Benches W/2 Chairs
- 1 Fan-Glo Heater
- 1 Shelf Roof
- 1 Skid United Mill Exit and Entrance Fixture for Plates
- 1 Skid Metal Box #895, Hot Plate Racks #906
- 1 Frame Motor/Gear Driven Blender
 - 1 Lg. Pipe #990
 - 1 Lg. Pipe, Fire Ext, for B & J Hood

SC 01234 (Continued)

- 1 Skid Compacting Dies
- 1 Skid Blanking Dies, Fixtures for Brake
 - 1 Portable Elevating Table W/Handle #1059
- 1 Skid Electric Panel for Vac. Melt Platform
 - 1 X-16 Portable Heating Table W/Temp Controller
- 1 Carton Blending Baskets & Boxes
- 1 Case Glo-Bars #854
- 1 Skid Kinney Vac Pump W/2 Cases Gauges & Controls
 - 1 Press #964

SC 01232

August 9, 1966

Contents of Youngstown Cartage Co. Flatbed Trailer - NY License 47-057

- 1 Niagara Shear #965
- 2 United Mill Rolls #990
- 1 Case Diffusion Pump W/Hoist for Melt Platform # 895 W/Bearings for B & J Mill
- 1 Skid Sodium Platform Piping
- 1 Skid Hydraulic Piping
- 1 Skid Pull Rods, Thermocouple & Fire Ext. Head
- 1 Skid Piping for Melt Platform
- 1 Skid Conveyor for Watson-Stillman Press
 - 1 Open Foreman's Bench

SC 01233

August 9, 1966

Contents of Youngstown Cartage Co. Flatbed Trailer - NY License 152-603

- 1 Lot Steel Platforms From Melt Platform Incl. Stairway, Rails, Deck Plates, I-Beams
- 1 Lot Sodium Platform Stanchion
- 1 Lot Cross I-Beams, Deck Plates, United Mill #990
 - 2 United Rolls #990
- 1 Skid Roller Chuck (4pcs) #990
- 1 Skid Open Air Induction Furnace #1385
- 1 Skid 2 Drive Shafts & Drive Shaft Support #990
- 2 Cases Misc. for United Mill #990
- 1 Case Control Panel #990
- 1 Case Chain Hoist #915

SC 01235

August 10, 1966

Contents of Youngstown Cartage Co. Flatbed Trailer - License NY 145-237

- 1 K & T Milling Machine #827
- 1 L & S Shear #905
- 1 Skid Chem Cleaning Tanks & Temp Controls #1222
 - 1 Slip Roller, Peck, Stow & Wilcox #382
 - 1 Bench Grinder #873
- 1 Case Diffusion Pump FR Melt Room Bldg. #26
 - 1 Metal Catch-All for #905 Shear
- 1 Case Misc. Parts for #827 Milling
 - 1 Worktable on Casters
 - 1 Worktable W/Drawer
 - 1 Spray Booth - Control Area
- 1 Skid Parts #352
- 3 Bldg. & 1 Carton Office Partitions & Rails

SC 01236 August 10, 1966
 Contents of Youngstown Cartage Co. Flatbed Trailer - License NY 117-758

2 Workbench Cabinets #838 & 1049
 8 Worktables, Metal W/2 Stools - control area
 1 8-Drawer Work Bench #1020
 1 Work Bench W/Vise - Malt Platform
 1 Vacuum Cleaner - Malt Platform
 1 4-Drawer File Cabinet
 1 2-Door Cabinet
 1 Skid 2 Rollers for B & J Mill
 1 Case Rod Straightener Parts #1140
 1 Frame & Stairs + 1 Tank from Degreaser
 1 Table for Dies
 1 Work Table W/Drawer
 1 Wood Platform
 6 Stools
 1 Work Table W/Vise #875
 1 Convection Oven
 1 Blower & Vent #1282
 1 Dustkop
 1 Fan & Pedestal
 1 Shipping Container Drum New Prototype
 1 Case Alum Frames & Covers
 1 Case Vacuum Gauge
 1 Case Isostatic Misc Parts

SC. 01240 August 11, 1966
 Contents of Youngstown Cartage Co. Flatbed Trailer - License NY 76-824

1 Swager Roller (Mech Assy) #71979
 1 Miller Arc Welder W/2-Foot Switches #1243
 1 2-Door Work Bench (Atr Storage)
 1 Crusher for Paper Waste
 1 Dry Box Welding Chamber & Vac Accessories #1243
 1 Ultrasonic Tank & Bridge #71978
 2 Metal Work Tables W/4 Cts. Wire Baskets
 1 Wire Brusher #958
 1 Dust Kop #982
 2 Densitometer #71939
 1 Micrometer 24" to 36"
 1 Tool Box
 1 Air Gage #1101
 1 Magna-Test #1160
 1 Flak Gap & Checker #71929
 1 #985
 1 Transformer W/Black Light
 1 Ultrasonic Scope
 1 Radius Gages for Atr, U-Mo
 2 Work Tables & 1 Stool
 1 Cenco Vacuum Pump, Vac. Storage
 1 #14 Delta Single Spindle Drill Press
 1 2-Door Storage Cabinet
 1 Stairway, Sodium Platform

SC 01239 August 11, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - NY License 153-060

1 Pangborn Sandblaster #1164
1 Pangborn Sandblaster, Dust Collector #1164
1 Dake Press #1104
6 Cartons ENL Shipping Tubes
1 Skid .190 x 48 x 144 Aluminum Sheet
1 Skid .190 x 36 x 96 Aluminum Sheet
1 9-Section Elender Mechanism
1 K. D. Canister Shipping Box for FM-3
2 Cases United Mill Spare Parts
1 Trion Unit #1181
1 Electrical Panel W/High Voltage Panel #1181
1 16 x 24 United Roller
3 United Groove Rollers, Ser #4134, 4135 & 4457
1 Bdl. Misc. Exhaust Pipe for Trion Unit

SC 01238 August 11, 1966
Contents of Youngstown Cartage Co. Flatbed Trailer - NY License 152-601

1 8-Drawer Workbench #1021
1 Cabinet Work Bench #1022
1 Monarch Lathe #832
1 Hood & Vent Sys. W/Coolant Tank & Motor #478
1 Do-All Grinder #478
1 X-32 Rockwell Belt Sander
1 #20 Dual Spindle Drill Press
1 Chem Cleaning S/S Tank W/Legs
1 Chem Cleaning S/S Tank Wagon
1 Foreman's Desk
1 Shelf Roof for Ultrasonic Racks
1 10-Bank Argon Manifold
2 S/S Tanks
1 Angle Iron Frame
2 8 Section Shelves
2 Lab Benches

SC 01241 August 12, 1966
Contents of American Freightway Trailer #474

1 Case Motor, Motor w/Brush, Fixture (2), A-1300 Furnace
1 Case Parts for United & B & J Mill
1 Tray for United (Auto-Plate Return)
1 Case 14 Motors & 1 Fan
1 Case Material from parts Crib - Att G. Carroll
3 Sections Fence for B & J mill
1 Case Electric Pump, comp. Die, Transformer
1 12-Drawer b/p cabinet
1 5-Drawer b/p cabinet D Size w/iron table with drawings (#1092)
1 Carton 3 Dev Pt. #900, 851, 668 & surface pot.
2 4-Drawer File Cabinet - Engineering
2 Bdl. ENL Fibre Tubes
2 Cases & 1 Carton Glass Partitions
8 Cartons Uniforms
1 Carton Aluminum Grit
1 Carton Aluminum Covers & Plates
1 Skid 18 Cartons Aluminum Fittings - Parts Crib
1 Welding Fixture
1 Skid 12 Cartons Melt Flat & Crib Parts
1 Skid 7 Cartons #1094, 1093, 1386, 1234, 1241 & Thermocouple Welder

1 Carton Mica Sheets
 1 Carton Thermocouple wire, spray guns & hoses
 2 Cartons Air Melt Crucible
 1 Surface Plate #71938
 4 Coffins - Air Melt Crucibles
 1 Skid Electric Panels #1243
 1 Skid Misc. Dies & Fixtures
 1 Metal Table #477
 2 Cartons PH Meter #361 & 917
 4 Cartons Glass - G. Carroll
 3 Cartons Office - A. Garnier
 1 Carton Chem Lab #71923
 1 Carton Drafting Material
 5 Cartons Office Equipment - G. Ladd
 1 Carton Office Equipment - T. Cleary
 2 Cartons Office Equipment - G. Carroll
 5 Metal Desks #1114, 1179, 486, 1148, 1260
 5 Metal Chairs #1055, 1313, 3 unnumbered
 1 Metal Shelf Cabinet #1180
 1 2-Drawer Storage Cabinet
 1 4-Drawer File Cabinet
 2 2-Drawer File Cabinet (Gullo)
 4 Metal Arm Chairs #1316, 3 unnumbered
 1 Metal Coat Tree
 2 Metal Drafting Tables #1328, #1327 w/stool
 1 Carton Drafting Table Accessories
 1 Metal Conference Table #1401 - G. LaPier

SC 01242 August 12, 1966
G. LaPier Picked up by J. Nyland:

1 Frieden Calculator #1036
 1 Gamma Scanner Manual

SC 01243 August 15, 1966
Contents of American Freightway Trailer #448

1 Draw Bench #71976
 1 Wooden Box Misc. from Tool Crib
 1 Carton Misc. from Tool Crib
 1 Metal Table for Niagara Brake #150
 1 Metal Worktable
 1 Pump and Motor
 1 Verifax machine #29
 1 Foreman's Desk
 Globars Hevi-Duty Furnace
 1 Scale #5954
 1 Box ARMF Parts
 1 Box Chem Lab Glass
 1 Box Gages for Stillman Press
 1 Box United Mill Guides #990, Wiping Pads for Fenn Mill #1296
 1 Box Graphite molds - Shim Rods & Gages
 1 Box Plumbing supplies - Stock Room
 2 Skids Aluminum #5054-A (Mark)
 1 Stand for oven
 2 Bundles Cadmium Sections
 15 Pcs Duct for Precipitron
 1 Mimeograph Copy Machine #38449
 2 Boxes Plastic Sleeves
 1 Box Wire Baskets
 1 Box End Fittings #3405
 1 Box Buckets #2840
 1 Table with X-ray Viewer
 1 Skid Forming Dies
 6 Wooden Trays
 1 Box Misc. parts for Water Controls & Furnace #850, Hevi-Duty Electric
 Furnace #850, Globars Supports #150

SC 01243 (Continued)

- 1 Skid Instruments for Cooley Electric Furnace
 - 9 Aluminum Trays
 - 1 Aluminum Pan United Mill
- 1 Skid Misc. Dies
- 1 Skid Capacitrol #809
 - 1 Hot Water Heater
- 1 Box Dies #B-33972-T
- 1 Skid Parts for Sintering Furnace #1095
- 1 Skid FM-3 Dies
- 1 Case Chem Lab Glass
 - 1 Shop Bench with Instruments #1433 & 1073
- 6 Boxes Misc. supplies for Shop Work
 - 1 Box Frame Covers
 - 1 Box Forming Rubber BR-2 Tubes
 - 1 Box Dies & Rollers for Swager
 - 1 Melt Furnace Open Air Boron

SC 01245
NBS

August 16, 1966

- 1 Folder United Mill Blueprints
- 1 Folder Hevi-Duty Blueprints

SC 01248

August 17, 1966

Contents of American Freightway Trailer #460

- 45 Pcs Buss Ducts 10' Length
 - 1 Buss Duct 12' x 2' Wide
- 120 Pcs Buss Plugs
- 4 Pcs 13' Cable Rack
 - 8 Rolls Electric Wire Misc.
 - 2 90° Buss Duct 3' Long
 - 1 90° Buss Duct 4' Long
- 130 Ft. Wire Duct 6" x 6"
 - 6 Instrument Transformers
 - 1 Transformer 440 Volts 3 Ph.
 - 3 Switch Boxes 400 Amp 230 Volts
 - 1 Switch Boxes 600 Amp 240 Volts
 - 2 Murry Switch Boxes
 - 3 Clark Control Contactor
 - 1 Bull Dog Switch Box
 - 2 Murry Safety Switches
 - 1 Compact Switch 400 Amps
- 1 Pail Nuts, Bolts & Screws & Misc. Parts
MAIN SWITCHING GEAR #AEC-688 - 4" BUSS BARS
- 8 Pcs 5'6"
- 10 Pcs 4'6"
- 2 Pcs 2'6"
- 14 Pcs 2'6" 90°
- 6 Pcs 3'6"
- 3 Pcs 3'6" 90°
- 2 Pcs 6" Buss Duct Bakelite
- 5 Pcs 5'

SC 01250

August 18, 1966

Youngstown Cartage Co. Low-Boy Flatbed Trailer - NY License 145-542

- 1 Eliss Press #939
- 1 Double Furnace #1244
- 1 Skid 1-Electric Panel Board #1124
 - 1 - Electric Panel Board #1125
- 1 Hevi-Duty Transformer #1095

SC 01249 August 18, 1966
Contents of American Freightway Trailer #402

- 1 #1126 Isostatic Pressure Vessel & Base Including:
- 1 - Schematic Valve Panel
 - 1 - Skid of Tubing
 - 2 - Angle for Overhead Monorail
 - 5 - Beams for Overhead Monorail
 - 6 - Pcs. Grating for Isostatic Hole Platform
 - 1 - Cement Filled Column
 - 1 - Wooden Platform
 - 1 - Small Vacuum Cleaner
 - 1 - Small Fan
 - 2 - Portable Heaters
 - 1 - Electric Baseboard Heater
 - 1 - Control Panel (#1126D)
 - 1 - 2-Door Cabinet (empty)
 - 1 - 20 hp Motor for Compressor
 - 6 - Pcs. 8" Duct (exhaust)
 - 2 - Boxes Misc. Parts
 - 4 - Pipes for Catwalk Support
 - 1 - Electric Hoist
 - 1 - Compressor
 - 1 - Skid Diaphragm-Filter-Strainer
 - 1 - Electric Switch Panel
 - 1 - Case Heating Elements
 - 1 20' Hood for Shelves
 - 30 Drums (empty)
 - 1 Water Manifold for Melt Platform
 - 20 Bndl. Fiber Tubes
 - 1 Box Functional Fixtures for Inspection

SC 01251 August 18, 1966
J. Nylund

- 1 Lot Wright Field - Prof #3309
All Engineering Files & G. Lapiere Correspondence Files

SC 01252 August 19, 1966
Youngstown Cartage Co. Flat-Bed NY Lic. 117-758

- 1 #17950 Bridgeport Miller from Graphite Room
7 Pcs. Duct Material, Exhaust system from Bldg. #20
1 #825 Monarch Lathe from Graphite Room
1 Lot #990 United Mill Deck Plate Supports

SC 01253 August 19, 1966
Contents of American Freightway Trailer #450

- 1 71977 Milwaukee Simplex Milling
- 1 (shipping cont) Empty Drums
 - 4 (shipping cont) Metal Liners
 - 3 Pcs. #1183 Precipitron
 - 3 pails Misc.
 - 1 Fan Fan (small)
 - 2 Trays
 - 1 Lamp
 - 1 Stool
 - 2 Graphite Molds
 - 1 Westinghouse Dryer
 - 2 S.S. Tanks 12" x 4'
 - 1 Sandblaster #247 Pangborn
 - 1 Roller #4136, United
 - 1 Coffin from Tool Grib, PIR mat'l
 - 1 Belt Sander #1332

SC 01253 (continued)

- 1 Ultrasonic Generator #988
- 1 Auto Acetylene cutter (Airco) #11
- 1 Toledo 1500 lb. Scale #1003, (Defective)
- 2 Main Service Switchpanels & channels (2) plates (cover)
- 1 #277 Superscaler Power Supply
- 1 Lot Aluminum Tote Trays
 - 1 #1321 Lindberg for Gas Analyser
 - 1 ATR Welding Fixture
 - 1 Lodge & Shiply & Niagara Shear Blades #1270
- 1 Skid Dies - GEMR
 - 1 #935 Veeco Leak Detector
 - 1 1363 Kalamzoo Band Saws
- 1 Case Chem Lab Equipment

SC 01245

August 23, 1966

Contents of American Freightways Trailer #438

- 2 Slab Top Lab Benches W/4-Drawers & 4 cabinets #1025
- 3 Slab Top Lab Table W/2-Drawers
- 1 Slab Top Lab Bench W/2-Drawers & 2 Cabinets
- 2 Slab Top Lab Benches W/5-Drawers
- 2 4-Drawer File Cabinet
- 8 2-Door Storage Cabinets
- 1 3-Shelf Metal Bookcase
- 1 4' Metal Worktable
- 1 Open Shelves (4 Shelves)
- 2 Glass Door Cabinets (6 Shelves) #1024 & 1268
- 18 Cartons Glass Bottles from Chem Lab
 - 1 55-Gal Drum K-1 Compound for Draw Bench
 - 1 #9 Walker-Turner Band Saw
 - 1 Spot Welder, Alphill #1378
- 1 Case Jigs & Fixtures from Cab. #1
- 1 Lot Fence, Pans & Plywood for B & J Mill
 - 1 Anvil for Watson-Stillman Press
 - 2 "A" Frame #1236 & 1237 with--
 - 3 Lgs. $\frac{1}{2}$ " Rd. 12' Alum Rods
 - 1 Sht $\frac{1}{2}$ " x 36" x 96" Alum Sheet
 - 1 Sht $\frac{1}{2}$ " x 36" x 57" Alum Sheet
 - 1 Sht .190 x 36" x 96" Alum Sheet
 - 1 Sht .375 x 36" x 88" Alum Sheet
 - 1 Sht .190 x 36" x 36" Alum Sheet
 - 1 #1141 Crane, Hyd. Lift
- 2 United Mill Deck
- 2 Boxes Instruments #503 (Chem Lab)
- 1 Case Misc. Chem Lab (Glass Bottles)
- 1 Box Macar Power Supply
- 1 Box Spectro Photometer - Centerfuge - Var Speed Motor 2-Rulleel Motors
- 1 Box Chem Lab #503 Instruments
- 11 Ctns. Electrical Supplies from Stockroom
- 6 Ctns. Plastic Sleeving 7"
 - 1 Furnace for Drying Silca Gel #951

SC 01255 August 23, 1966
 Contents of Youngstown Cartage Co. Flatbed Trailer - NY License 145-237

1 Famco Press #969
 1 Sibley Single Spindle Drill Press #946
 2 Pcs. Exhaust System From Graphite Room
 1 Diacro Rod Parter #2, #814
 1 10 HP Motor W/Pump & Tank
 1 Filter Portable Pump
 1 Cooling Tank W/Re-circulating Radiator
 1 Kinney Vacuum Pump, 5 HP Motor
 5 Vacuum Chambers #2478
 1 Rathon HYD Cylinder 14" Stroke
 3 Storage Racks for Plates
 6 S/S Chem Cleaning Tanks
 23 Drums, Shipping Containers
 1 Galv. Tank W/Stand

SC 01256 August 24, 1966
 Contents of American Freightway Trailer #454

1 PRDC Fixture
 3 "A" Frames #858, 1235 & 1238
 26 Sheets Aluminum, Assorted
 1 Plate B/S for SM-1 (457 #Net)
 2 Steel Storage Racks #836
 1 Lot Misc. Pipe, Tubing, Rods, and Conduit
 1 Lot Fiber Tubes for Fuel Plates
 2 Sheets Inconel
 1 2-Door Slab Top Bench
 4 Poly Acid Tanks
 3 S/S Acid Tanks
 1 Tank Rack
 1 Roof Exhaust Vent - Control Area
 3 4' Metal Worktables
 1 Metal Foreman's Desk
 6 Drums - Shipping Containers
 1 PRDC Stand for Picon Drive
 1 PRDC Leak-Check Assy Per J. Nylin
 3 Carts Fiber Tubes for EML
 1 Cart For Hot Rolling
 1 Drum PRDC Tubes

[REDACTED] This document consists of 6 pages
[REDACTED] of copies, series [REDACTED]
[REDACTED] PENNSYLVANIA-7

SYLVANIA ELECTRIC PRODUCTS, INC.
HICKSVILLE PILOT PLANT

OCCUPATIONAL EXPOSURE TO RADIOACTIVE DUST

RECEIVED
JUL 11 2001
Hazardous Waste Remediation
NYSDEC Region 1

by

Industrial Hygiene Branch
Health and Safety Division

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U. S. Atomic Energy Commission
New York Operations Office
Health & Safety Division

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APPENDIX A

Job Analysis Sheets

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Sample Record Sheets
(Copy 1 only)

~~CONFIDENTIAL~~

SCOPE

During the period July 17-21, 1953, a semi-annual survey was conducted by the Industrial Hygiene Branch at the Hicksville Pilot Plant, Sylvania Electric Company. This was the second survey of this plant and covered the industrial hygiene problems existing during ingot hydriding, de-hydriding, powder preparation, hot pressing and die processing operations. In addition, a radiation survey was made of the main operating area of the pilot plant.

PURPOSE

1. To gather data from which the daily weighted average exposures of plant personnel can be computed.
2. To compare personnel exposures with those obtained in the previous NYOO survey. (12/22/52).
3. To compare general air and breathing zone concentrations at specific locations within the operating area.
4. To gather data concerning the general level of surface contamination throughout the plant.
5. To recommend physical or procedural changes based on the survey findings.

METHOD OF STUDY

The method of conducting the dust survey is the same as that reported in Sylvania-6. The radiation survey was conducted by taking alpha, beta and gamma readings on the surfaces of equipment and structures using a Juno Alpha Survey Meter and a Modified 2610A Beta-Gamma Survey Meter.

RESULTS OF STUDY

	<u>Present Survey</u> <u>7/17 - 21/53</u>	<u>Previous Survey</u> <u>12/22/53</u>
Number of personnel studied	117	137
Average exposure (d/m/M ³)*	7	14
Maximum exposure (d/m/M ³)*	48	180
Less than 70 d/m/M ³	100%	97.7%
Over 70 d/m/M ³ (180 d/m/M ³)	-	2.2%

*d/m/M³ = disintegrations per minute per cubic meter of air.

70 d/m/M³ = Maximum allowable concentration (MAC) tentatively used by the New York Operations Office.

[REDACTED]

The installation of exhaust hoods and panel ventilation in the Die Processing Area is primarily responsible for the reduction of the only overexposure found in the previous survey. The average weighted exposures of all employees are listed in Table I along with exposures reported in the previous survey. These results are also shown graphically in Figure 1. Table II presents a comparison of breathing zone samples taken in the plant during the two surveys. Table III has been prepared to show a comparison of the average general air concentrations found in the operating area. The results of a radiation survey made in the operating area are shown in Figure 2. The average weighted exposures are computed on Job Analysis Sheets which are included in Appendix A.

MAJOR JOB BREAKDOWN

Since the last survey, several new operations have been introduced and others have been modified. These new and modified operations are described below and are also depicted diagrammatically in Figure 3.

A. Ingot Cleaning Operations

1. Ingot is removed from storage area, wheeled into cleaning room and placed into tank.
2. Operator closes and seals lid of tank and leaves room closing sliding steel door behind him.
3. Operator turns on panel controls to start cleaning cycle.
4. The cleaning cycle lasts approximately 133 minutes and consists of:
 - (a) Acid holding (90 minutes)
 - (b) Draining (4 minutes)
 - (c) Water holding (11 minutes)
 - (d) Draining (4 minutes)
 - (e) Acetone holding (20 minutes)
 - (f) Draining (4 minutes)

B. Ingot Hydriding Furnace Operation

1. Empty carriage is removed from second floor furnace via air lock.
2. Ingot is loaded onto carriage which is pushed through air lock into furnace.
3. Hydride produced in ingot furnace falls into hopper and is stored there until a sufficient amount is accumulated.
4. Furnace section of the hopper is closed off and the dry box section is opened.

C. Ingot Dry Box Operation

1. Hydride from hopper falls through swinging door (located on top of dry box) into pan inside dry box.
2. Empty retort is weighted on scale near dry box.
3. Empty retort is placed into drybox through airlock.
4. Hydride powder is scooped into retort.
5. Retort is weighed on scale.

D. Ferguson Furnace Operation (Dehydrating)

1. Loaded retort is placed in Ferguson furnace.
2. Retort is removed from furnace and cooled in water-filled quench tank.
3. Furnace hoses are disconnected from retort.
4. Retort is removed to the Bulk Drybox.

E. Bulk Dry Box Operation

1. Retort is placed in bulk dry box via airlock.
2. Retort is unloaded and metal powder is dumped on the floor of the drybox.
3. Empty retort is recycled through the loading chamber.
4. Retort is wiped down with trichlorethylene.
5. Retort is removed to Ingot Dry box for phases C and D.
6. Uranium sinter cake is crushed manually with steel mandril in drybox.
7. Pressure cooker and 2 clip cans are placed into drybox.
8. Crushed uranium loaded into pressure cooker and clip cans which are then sealed.
9. Pressure cooker and cans are then removed from bulk dry box to ingot dry box.

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F. Pulverizing Operations in Ingot Dry Box

1. Grinder loaded with crushed uranium from pressure cooker and cans.
2. Ground powder is removed from mill tray and dumped into a magnetic separator.
3. Powder is screened into small cans and weighed.
4. Die loading cans are brought into Ingot Dry Box and loaded.
5. Die loading cans are removed to pressing zone.

G. Can and Ram Assy Operation

1. Cans are placed in holding fixture (vise) and ram plug clamp is inserted into bottom of can and locked in place.
2. Can assembly removed from fixture.

H. Hot Pressing Operation

1. Die loading can attached to die assembly in rack.
2. Die is heated to proper temperature and the powder is dumped by releasing sleeve and pushing ram plunger down.
3. Hot pressing of powder in die.
4. After hot pressing, die loading can is removed from die assembly and sent to can cleaning area. The die assembly is sent to the die processing area.
5. The rack is vacuumed and other maintenance is performed.

I. Die Processing Operation

1. Hot die assembly is cooled to about 200°C in the die processing area by man cooling fans.
2. The bore of each die is thoroughly vacuumed to remove all uranium.
3. Die assembly is separated into Tools 1 and 2. Tool #1 is sent to the die cleaning area and Tool #2 is sent to the Hannefin Press.

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4. Empty rack is revacuumed and sent to die assembly loading area.
 5. Slug is pressed out of die in Hannefin press.
 6. Slug and die liners are vacuumed.
 7. Slug is numbered in a pneumatic numbering machine.
 8. Slug burns and flash ends are removed on a belt sander. Slug is then taken to quality control laboratory.
 9. Dies and punches for tools 1 and 2 are cleaned on rotating wire brush and aquadaged.
 10. Tools 1 and 2 reassembled and placed in rack.

J. Can Cleaning Operation

1. Can is completely disassembled and rams and cans are degreased in an automatic degreaser.
2. Cans are reassembled.

DISCUSSION

From an overall viewpoint, the exposure of plant personnel to alpha emitting dust has not changed significantly since the last survey (12/22/52), the average weighted exposure being 7 d/m^3 as compared to 14 d/m^3 in the previous survey. Due to the installation of ventilation in the die processing area, the maximum air dust concentrations have been decreased there so that the Die Processing Technician's exposure has been reduced from 182 d/m^3 to 48 d/m^3 .

Although the results of air dust samples taken during the ingot hydride furnace operation are low, several imperfections in operations were noted such as the accumulation of dust and flakes on the floor and the improper use of the carriage canopy hood.

At the time of this survey, no ventilation was provided at the Ingot Dry box. Breathing zone samples taken during the opening and closing of the dry box air lock range between 57 d/m^3 and 460 d/m^3 , the average being 210 d/m^3 .

It was observed that the Kinney vacuum pump located on the loading rack is exhausted directly into the room during hot pressing operations. This condition is not desirable insofar as it has been shown in the past that uranium contamination has been released through the pump exhaust.

During the period of this survey, considerable quantities of dust were detected in the area of the burnout hood. It was later determined that this was caused by the overloading of the hood with scrap uranium with the result that the prefilter in the hood exhaust system was burned out. Due to the relatively low elevation of the discharge end of the exhauster, the dust passing out the exhauster was blown back into the building. General air samples taken on the building roof near the discharge and of the burnout hood exhauster ranged between 0 d/m³ and 180 d/m³ with an average of 64 d/m³.

Several instances were observed where broom sweeping was the main method used in cleaning up floors. In addition it was observed that compressed air was used in several operations for cleaning purposes. Both of these practices are undesirable and should be eliminated.

A hydride spill and ensuing small fire occurred during this survey near the ingot dry box. The fire was quickly extinguished by several plant technicians. Unfortunately, none of these men saw fit to wear respirators and proper clothing. This indicates the necessity of thoroughly indoctrinating plant personnel in the proper techniques for handling spills.

The results of the radiation survey indicate an overall low level of surface contamination with the exception of the burnout hood and billet storage areas where the surface contamination is slightly higher.

CONCLUSIONS

In order to reduce the airborne contamination at several dust producing operations, the following recommendations are made:

Recommendation #8- Carriage canopy hood should be properly positioned before loading ingot onto furnace carriage.

Recommendation #9- Vacuum ingot furnace carriage floor after loading ingot onto furnace carriage.

Recommendation #10- Provide adequate ventilation for the ingot dry box airlock.

Recommendation #11- Exhaust the Kinney vacuum exhaust pump to the central vacuum system or into any nearby exhaust system by means of a flexible hose connection.

Recommendation #12- Improve operating techniques and housekeeping at the burnout hood.

Recommendation #13- Provide burnout hood exhauster with duct work at discharge end which will discharge exhaust dust and fumes above the roof level.

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Recommendation #14- Use flexible hose connections from the central vacuum system for the removal of dust from floors, equipment, and other surfaces.

Recommendation #15- Improve operating techniques and housekeeping procedures in removing spills from floors and other surfaces.

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TABLE I

COMPARISON OF DAILY WEIGHTED EXPOSURES

Occupation	No. of Employees	Exposure in d/m ³	
		NYOO Survey 1/53	NYOO Survey 7/53
Guards- Night Shift	2	0.1	0.09
Nurse	1	0.04	0.01
Control Lab. Technician	2	0.04	0.03
Control Lab. Chief Engineer and Technicians	0	0.03	
Janitor	3	0.1	0.2
Development Engineer	16	0.2	0.08
Development Engineers-Processing	0	0.2	
Machine Shop Operators	17	0.1	0.04
Machine Shop Operators-Processing	1	0.2	0.17
Stock Clerk	1	0.02	0.01
Guards- Day Shift	2	0.04	0.01
Experimental Projects Engineer	1	0.2	0.08
Accountability Engineer	1	0.04	0.04
Office Manager	1	0.04	0.04
Safety Inspector	0	0.1	
Administrative Personnel	29	0.02	0.02
Electrical Installation Engrs. Ventilation & Production Installation Engineers	2	0.06	0.06
Consultant	0	0.06	
Production Engineer	1	0.05	0.05
Chief Production Engineer	1	0.1	0.08
Engineering Manager	1	0.1	0.06
Accountability Man	1	0.1	0.06
Die Processing Technicians	1	0.5	0.17
Die Processing Technician Maintenance and Repair	4	2.6	0.68
Die Processing Engineer	1		0.56
Pressing Technicians	1	0.2	0.06
Pressing Technicians-Die Can Assy	3	0.4	0.13
Pressing Technicians-Die Can Cleaning	3		0.11
Die Can Cleaning Technician	1		0.31
Pressing Engineer	1		0.38
Slug Canning Technician	1	0.2	0.02
Slug Canning Engineer	1		0.3
Vacuum Development Technicians	1		0.3
Powder Preparation Technicians	0	0.2	
	11	0.42	0.18

TABLE I (Continued)

COMPARISON OF DAILY WEIGHTED EXPOSURES

Occupation	No. of Employees	Exposure in d/m/m ³	
		NYOO Survey 1/53	NYOO Survey 7/53
Supervisor-Powder Preparation Technicians	1	0.1	0.07
Engineer in Charge-Powder Prep	1		0.08
Maintenance Men	2		0.18
Total No. Employees	117		
Average Multiple of MAC		0.2	0.1

TABLE II

TABULATION OF AVERAGE BREATHING ZONE SAMPLES

Operation	No. of Samples	Concentration ~d/m ³	
		NYOO Survey 1/53	NYOO Survey 7/53
<u>1. Die Processing Technician</u>			
1. Unloading die assy, vacuuming rock, and dis-assembling die	3		120
2. Ejecting slug from die	2		140
3. Stamping slug	2	590	105
4. Filing slug	3	440	50
5. Wire brush cleaning die section #3	4	260	103
6. Wire brush cleaning and aquadaging die sections 1 and 2	3	460	250
7. Aquadaging a complete die assy	3		16
8. Cleaning 1 set of end plugs	2	220	48
9. Cleaning 1 set of die liners	3	220	99
<u>2. Pressing Technician</u>			
1. Disassy of cans and putting in degreaser	5	3.7	259
2. Cleaning plungers	2	3.7	28
3. Moving plunger and transferring powder from can to die	3	91	60
4. Removing loading can and plunger from die section	4	510	129

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TABLE II (Cont'd)

Operation	No. of Samples	Concentration ~ d/m/M ³	
		NYOO Survey 1/53	NYOO Survey 7/53
3. <u>Slug Canning Technician</u>			
1. Removing canned slug die assy from rack	1		13
2. Knocking out canned slugs	1		230
4. <u>Powder Preparation Technicians</u>			
1. Removing loaded retort from ingot dry box and replacing with empty retort	3		230
2. Removing loaded can from ingot dry box and replacing with empty can	2	70	460
3. Removing empty clip can from ingot dry box and replacing with loaded can	2		90
4. Removing and replacing screen in ingot dry box	1		91
5. Removing shaker from ingot dry box and replacing	1		161
6. Removing mill hammer from ingot dry box and replacing	1	600	57
7. Removing empty retort from bulk dry box and replacing with loaded retort	3	140	278
8. Removing full clip can from bulk dry box and replacing with empty can	4		51
9. Placing hydride retort in Furgeson furnace	3		167

TABLE II (Cont'd)

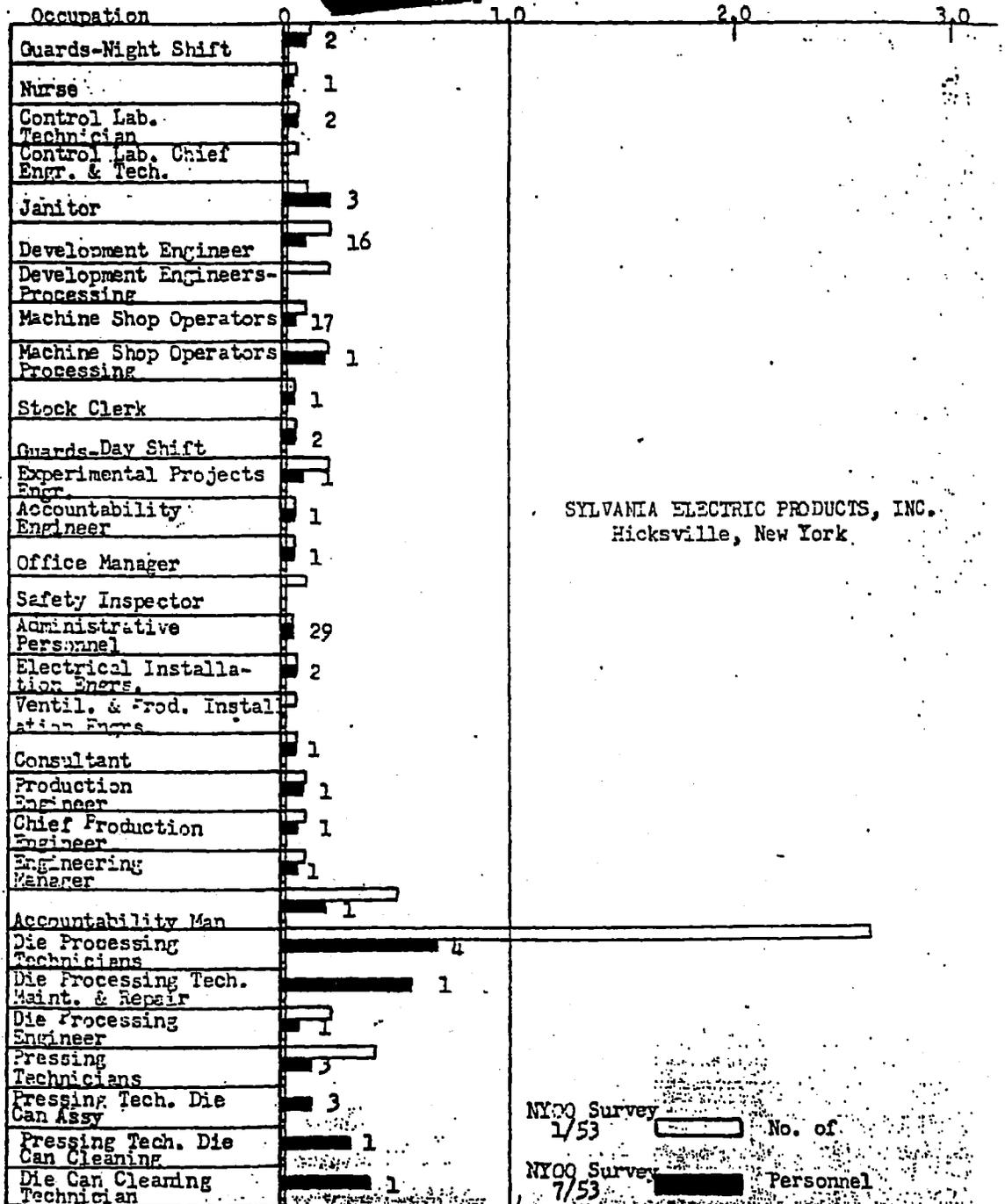
Operation	No. of Samples	Concentration $\mu\text{d}/\text{m}^3$	
		Survey 1/53	Survey 7/53
10. Removing retort from Furgeson furnace to cooler	1		610
11. Disassy and cleaning of retort	2	260	64
12. Loading ingot into ingot hydriding furnace	1		30
13. Removing empty carriage from ingot hydriding furnace	1		5.9

TABLE III

~~SECRET~~TABULATION OF AVERAGE GENERAL AIR SAMPLES

Location	No. of Samples	Concentration ~d/m ³	
		NYOO Survey 1/53	NYOO Survey 7/53
Guard Shack	2	3.0	0
Machine Shop	6	11	3
Engineering Office	3	13	6.6
Dispensary	2	2.3	0
Lunch room	4	3.5	0
Laboratory area	4	0.8	3.5
Men's room	2	16	2.2
Stock room	3	1.0	0
Administration offices	5	1.0	1.4
Billet Storage area	2	7.0	5.8
U308 Burnout hood	3	7	14
Ingot Dry Box Area	6		8.7
Bulk Dry Box Area	5	35	15.8
Furgeson Furnace Area	5	11	12.8
Loading Can Cleaning area	3	15	19.6
Nitric Acid Room	1	6	0
Shop in Building #1	2		2.5
Roof Near Burnout Hood Exhauster	4		64
Shipping and Receiving	2		0
Experimental Press Area	5	6.0	34
Centerless Grinder			16
Die Processing Area	6	48	46
Pressing Area	3	7	2.8
Plating room	2		11
Plunger Cooling area	1		28
Hydrogen Purification room	2	9.0	0
Tank Storage Room	2	4.0	0

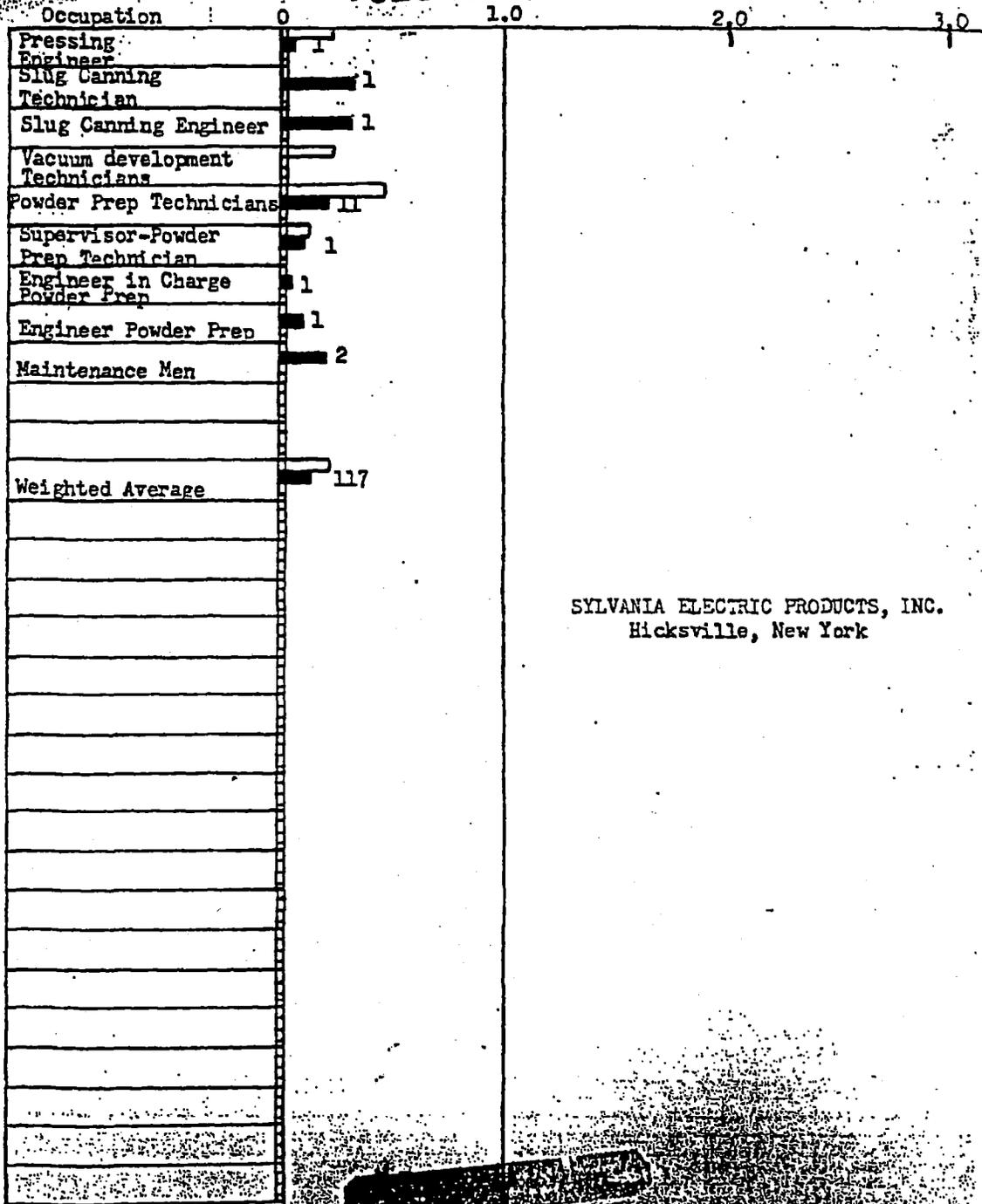
WEIGHTED AVERAGE EXPOSURE (MAC)



SYLVANIA ELECTRIC PRODUCTS, INC.
Hicksville, New York

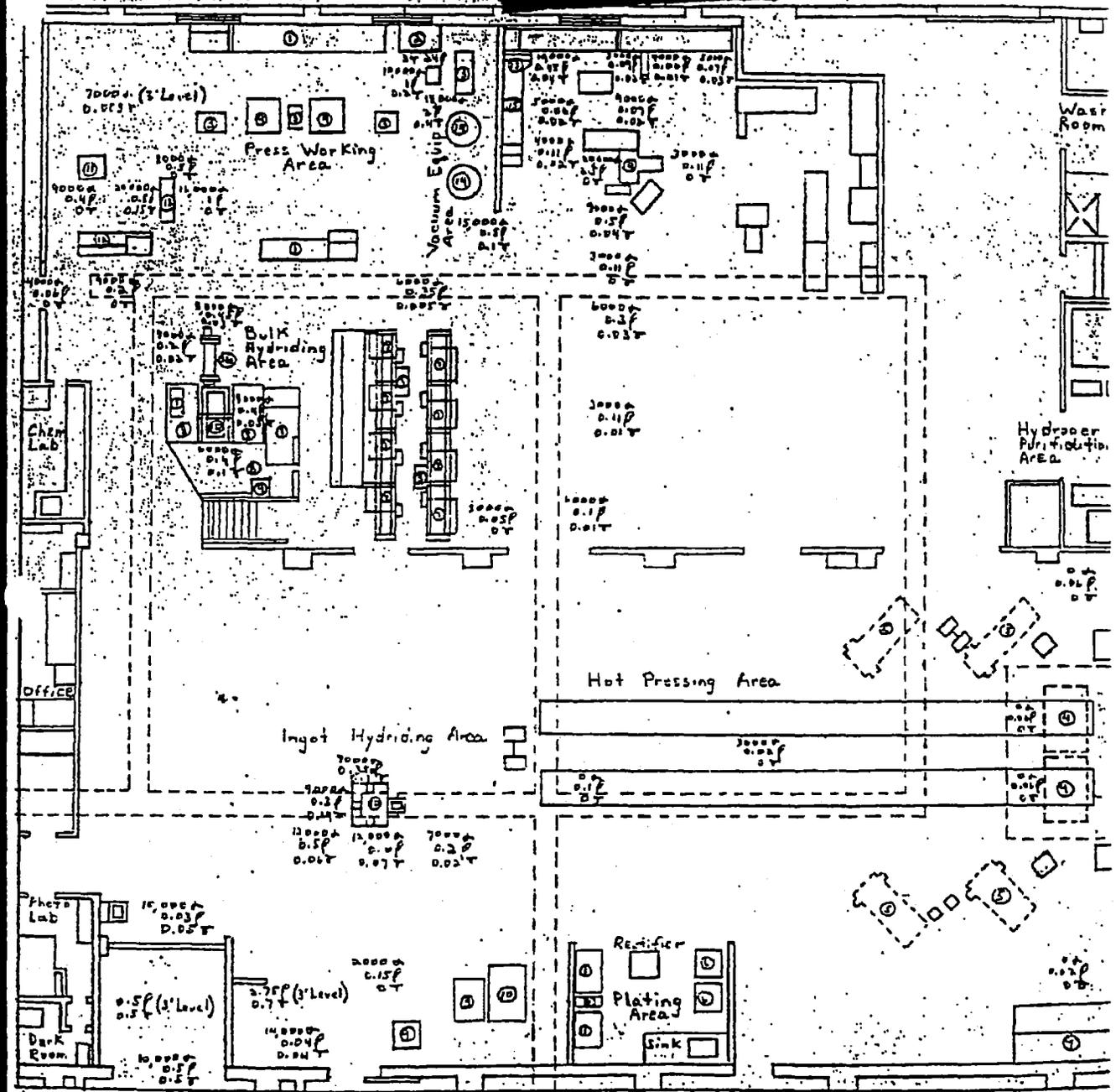
NYOO Survey 1/53 No. of Personnel
NYOO Survey 7/53

WEIGHTED AVERAGE EXPOSURE (MAC)



SYLVANIA ELECTRIC PRODUCTS, INC.
Hicksville, New York

Figure 1a



- ⊙ Table
- ⊙ Burnout Hood
- ⊙ Vacuum Pump
- ⊙ Press
- ⊙ Furnace Car
- ⊙ Tank
- ⊙ Furnace
- ⊙ Platform

- LEGEND**
- ⊙ Control Panel
 - ⊙ Dry Box
 - ⊙ Sander
 - ⊙ Band Saw
 - ⊙ Centrifugal Grinder
 - ⊙ Vacuum Collector
 - ⊙ Buffer
 - ⊙ Loading Lock

α is expressed as $d/min/in^2$
 β is expressed as m/rep
 γ is expressed as mr/hr

RESULTS OF RADIATION SURVEY AT BLDG #1, HICKSVILLE PLANT, SYLVANIA ELECTRIC CO.

FIGURE 2

FLOW DIAGRAM FOR SYLVANIA ELECTRIC COMPANY HICKSVILLE PLANT

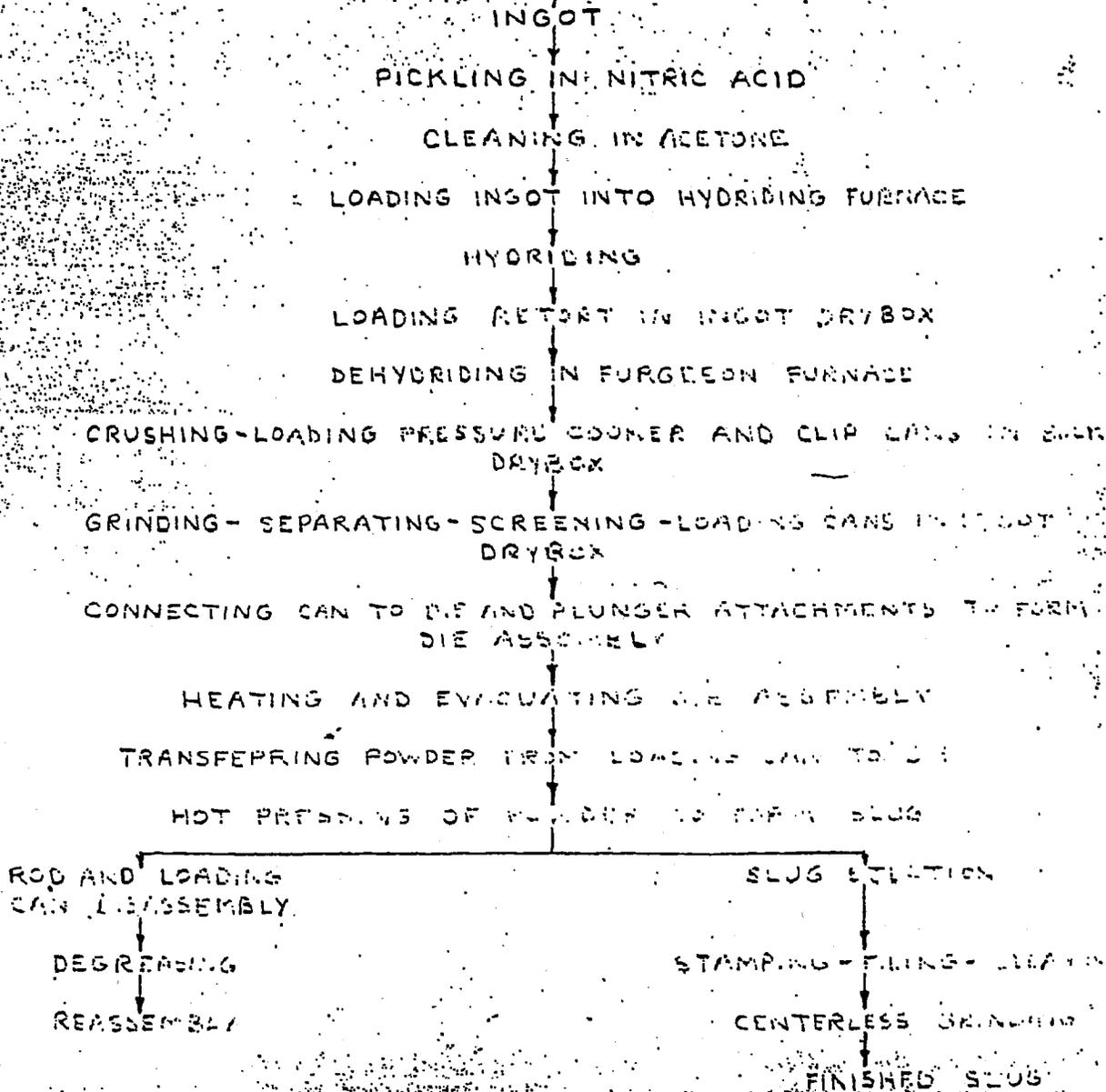


FIGURE 3

APPENDIX A

JOB ANALYSIS SHEET

OPERATOR: Guard- Night Shifts 1 MEN/SHIFT: 2 SHIFTS/DAY: 2 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m/m ³ (C)			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	AVG	
GA- Guard Shack	-	-	240	2	0	0	0	0
GA- Building #1	-	-	180	76	0	180	16	2880
GA- Machine Shop	-	-	40	6	0	18	3	120
GA- Engineering Office	-	-	20	3	0	20	6.6	132

*Adjusted to two significant figures ΣT 510 $\Sigma (T \times C)$ 3100

$\Sigma \frac{(T \times C)}{\Sigma (T)} = \underline{6.1}$ $d/m/m^3 = \underline{0.09}$ TIMES THE MAXIMUM ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Nurse 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON'C.* TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Dispensary	-	-	420	2	0	0	0	0
GA Processing Area	-	-	30	61	0	130	15	450
GA Lunch room	-	-	60	4	0	0	0	0

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 450

Σ $\frac{(T \times C)}{\Sigma (T)}$ = 0.88

d/m³ = 0.01

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

OSHA FORM 100
(11-5-52)

JOB ANALYSIS SHEET

OPERATOR: Control Lab. Technician 2 MEN/SHIFT: 1 SHIFTS/DAY: 2 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Laboratory Area	-	-	220	4	0	7.1	3.5	770
HA Administrative Offices	-	-	220	5	0	7.1	1.4	308
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's Room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 1100

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 2.1$

$d/m^3 = 0.03$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION.

FORM 144
 (11-7-52)

JOB ANALYSIS SHEET

OPERATOR: Janitor 3 MEN/SHIFT 1 SHIFTS/DAY: 3 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Building #1	-	-	440	76	0	180	16	7040
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's Room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 7060

$\frac{\sum (T \times C)}{\sum (T)} = 13.9$

$d/m/m^3 = 0.2$

TIMES THE MAXIMUM
 ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Development Engineer 16 MEN/SHIFT: 1 SHIFTS/DAY: 16 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Engineering Office	-	-	450	3	0	20	6.6	2950
GA Lunch room	-	-	60	4	0	0	0	0

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 2950

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 5.8$

$d/m^3 = 0.08$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Machine Shop Operators 17 MEN/SHIFT: 1 SHIFTS/DAY: 17 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³ /M ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	AVG	
GA Machine Shop	-	-	450	6	0	18	3	1350
GA Lunch room	-	-	60	4	0	0	0	0

*Adjusted to two significant figures $\Sigma T = 510$ $\Sigma (T \times C) = 1350$

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 2.65$ d/m³/M³ = 0.04 TIMES THE MAXIMUM ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Machine Shop Operators - Processing MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. (LES)	CONCENTRATION C/M ³			AVG CON' C. TIMES TOTAL TIME (TXC)
					LOW	HIGH	AVG	
GA Processing Area	-	-	395	61	0	130	15	5930
GA Machine Shop	-	-	45	6	0	18	3	135
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures Σ T = 510 Σ (T x C) = 6100

Σ $\frac{(T \times C)}{\Sigma (T)}$ = 12 d/M³ = 0.17 TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Stock Clerk 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Stock room	-	-	10	2	0	0	0	0
GA Processing area	-	-	30	61	0	130	15	450
GA Lunch room	-	-	50	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures ΣT 510 $\Sigma (T \times C)$ 470

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 0.92$ $d/m/m^3 = 0.01$ TIMES THE MAXIMUM ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Guard- Day shift - 2 MEN/SHIFT: 1 SHIFTS/DAY: 2 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP LES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Guard Shack	-	-	260	2	0	0	0	0
GA Stock Room	-	-	60	2	0	0	0	0
GA Administration Offices	-	-	120	5	0	7.1	1.4	168
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 190

$\frac{\sum (T \times C)}{\sum (T)} = 0.37$

$d/m^3 = 0.01$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION

ORN 144
113-521

JOB ANALYSIS SHEET

OPERATOR: Experimental Projects Eng. 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Powder Preparation Area	-	-	220	23	0	21	11.7	2570
GA Office	-	-	220	5	0	7.1	1.4	308
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 2900

$\frac{\sum (T \times C)}{\sum (T)} = 5.7$

$\frac{\sum (T \times C)}{\sum (T)} = 5.7$ d/m³ = 0.08

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Accountability Engineer 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. ILES	CONCENTRATION d/m/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Administrative offices	-	-	380	5	0	7.1	1.4	531
GA Processing Area	-	-	60	61	0	130	15	900
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 1453

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 2.9$

d/m/m³ = 0.04

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Office Manager 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Administrative Offices	-	-	380	5	0	7.1	1.4	533
GA Processing Area	-	-	60	61	0	130	15	900
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 1450

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 2.8$

$d/m^3 = 0.04$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION.

JOB ANALYSIS SHEET

OPERATOR: Administrative Personnel 29 MEN/SHIFT: 1 SHIFTS/DAY: 29 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON'C.* TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Administrative Offices	-	-	450	5	0	7.1	1.4	630
GA Lunch room	-	-	60	4	0	0	0	0

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 630

$\Sigma \frac{(T \times C)}{\Sigma (T)}$

1.2

d/m³ = 0.02

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Electrical Installation Eng'r. 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. ILES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Processing Area	-	-	110	61	0	130	15	1650
GA Administrative Offices	-	-	330	5	0	7.1	1.4	461
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 2130

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 4.2$

d/m³ = 0.06

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

AM 144
11-9-92

JOB ANALYSIS SHEET

OPERATOR: Consultant 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Processing Area	-	-	90-	61	0	130	15	1350
GA-Administrative Office	-	-	350	5	0	7.1	1.4	490
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

$\Sigma T = 510$

$\Sigma (T \times C) = 1860$

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 3.7$

$d/m/m^3 = 0.05$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

11-3-52

JOB ANALYSIS SHEET

OPERATOR: Production Engineer 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Processing Area	-	-	165	61	0	130	15	2470
GA Office	-	-	275	5	0	7.1	1.4	385
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 2900

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 5.7$

$d/m^3 = 0.08$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION

(11-4-52)

JOB ANALYSIS SHEET

OPERATOR: Chief Production Engineer 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON'C.* TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Processing Area	-	-	110	61	0	130	15	1650
GA Office	-	-	330	5	0	7.1	1.4	461
GA Lunch Room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 2130

$$\Sigma \frac{(T \times C)}{\Sigma (T)} = \underline{4.2}$$

$$d/m^3 = \underline{0.06}$$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

FORM 154
11-9-52

JOB ANALYSIS SHEET

OPERATOR: Engineering Manager 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA Processing Area	-	-	110	61	0	130	15	1650
GA Office	-	-	330	5	0	7.1	1.4	461
GA Lunch room	-	-	60	4	0	0	0	0
GA Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 2130

$$\Sigma \frac{(T \times C)}{\Sigma (T)} = \underline{4.2}$$

$$d/m^3 = \underline{0.06}$$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Accountability Man 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION: d/m/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
BZ-Removing loaded retort from Ingot Dry Box and replacing with empty retort	2/3	3/4	0.50	3	170	310	230	115
BZ-Removing loaded can from Ingot Dry Box and replacing with empty can	1/6	2 1/2	0.40	2	130	790	460	193
BZ-Removing empty clip can from Ingot Dry Box and replacing with loaded can	1/6	1-3/5	0.27	2	71	110	90	24
BZ-Removing empty retort from Bulk Dry Box and replacing with loaded retort	1.4	3/4	1.05	3	170	480	278	292
BZ-Removing full clip can from Bulk Dry Box and replacing with empty clip can	0.8	1-3/5	1.3	4	0	140	51	66
BZ-Placing hydride retort into Ferguson furnace	0.9	3/4	0.68	3	120	210	167	114
BZ-Removing retort from furnace to cooler	0.5	3/4	0.38	1	-	-	610	232
BZ-Disassy and cleaning of retort	3.5	3/4	2.6	2	63	65	64	167
BZ-Loading Ingot into Ingot Hydriding Furnace	3.0	1/36	0.08	1	-	-	30	2.4
BZ-Removing empty carriage from Ingot Hydriding Furnace	7.0	1/36	0.2	1	-	0	5.9	1.2
GA-Billet Storage Area	-	-	108	2	5.8	5.8	5.8	625
GA-Vicinity Burnout Hood	-	-	55	3	0	21	14	770

CONTINUED

*Adjusted to two significant figures

Σ T

Σ (T x C)

$$\Sigma \frac{(T \times C)}{\Sigma (T)}$$

/M³

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Accountability Man MEN/SHIFT: _____ SHIFTS/DAY: _____ MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Ingot Dry Box Area	-	-	90	6	5.1	16	8.7	782
GA-Bulk Dry Box Area	-	-	90	5	7.1	21	15.8	1420
GA-Ferguson Furnace Area	-	-	90	5	8.3	18	12.8	1150
GA-Lunch Room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 6000

$\Sigma \frac{(T \times C)}{\Sigma (T)}$

11.8

d/m/m³

0.17

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Die Processing Technicians 4 MEN/SHIFT: 1 SHIFTS/DAY: 4 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³ /M ³			AVG CON'N. TIMES TOTAL TIME (TXC)
					LOW	HIGH	(C) AVG	
BZ-Unloading one die assembly, vacuuming rock, and disassembling die	2.3	7½	17.2	3	67	190	120	2110
BZ-Ejecting slug from die	0.83	7½	6.2	2	140	140	140	870
BZ-Stamping slug	0.3	7½	2.3	2	89	120	105	240
BZ-Filing slug	0.5	7½	3.7	3	29	80	50	185
BZ-Wire brush cleaning die section #3	0.75	7½	5.6	4	45	190	103	576
BZ-Wire brush cleaning and aquadaging die sections 1 and 2	1.1	7½	8.3	3	180	330	250	2100
BZ-Aquadaging a complete dieassy	2.3	7½	17.2	3	8	32	16.1	275
BZ-Cleaning 1 set of end plugs	0.8	7½	6.0	2	32	63	48	288
BZ-Cleaning 1 set of die liners	1.1	7½	8.3	3	4.5	160	99	820
GA-Die Processing area	-	0	365.2	6	26	89	46	16,800
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 24,300

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 48$

$d/m^3/M^3 = 0.68$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION

FORM 100
11-521

JOB ANALYSIS SHEET

OPERATOR: Die Processing Technician 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY
Maintenance and Repair

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON'C.* TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Die Processing area	-	-	440	6	26	89	46	20,000
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 20,000

$$\Sigma \frac{(T \times C)}{\Sigma (T)} = 39$$

$$d/m^3 = 0.56$$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Engineer in Charge of Die Processing 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY.

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Processing Area	-	-	110	61	0	130	15	1650
GA-Office	-	-	330	5	0	7.1	1.4	461
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures ΣT 510 $\Sigma (T \times C)$ 2130

$\Sigma \frac{(T \times C)}{\Sigma (T)}$ = 4.2 d/m³ = 0.06 TIMES THE MAXIMUM ALLOWABLE CONCENTRATION

PH 244
27

JOB ANALYSIS SHEET

OPERATOR: Pressing Technicians 3 MEN/SHIFT: 1 SHIFTS/DAY: 3 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
BZ-Moving plunger and transferring powder from can to die	4.2	1 1/2	5.25	3	5.8	120	60	315
BZ-Removing loading can and plunger from die section	3.3	1 1/2	4.1	4	29	360	129	529
GA-Pressing area	-	-	431	4	0	28	9	3879
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Man's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 4750

Σ (T x C) / Σ (T) = 9.3

d/m³ = 0.13

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Pressing Technicians 3 MEN/SHIFT 1 SHIFTS/DAY 3 MEN/DAY
 (Die Can Assy)

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Pressing Area	-	-	440	4	0	28	9	3960
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's Room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

$\Sigma T = 510$

$\Sigma (T \times C) = 4000$

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 7.8$

$d/m^3 = 0.11$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION

11-9-52

JOB ANALYSIS SHEET

OPERATOR: Pressing Technicians 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY
 (Die Can Cleaning)

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
BZ-Disassy of 6 can and putting in degreaser	8	2½	20	5	51	710	259	5190
BZ-Cleaning 6 plungers	3.7	2½	9.25	2	8	48	28	259
BZ-Moving plunger and trans- ferring powder from can to die	4.2	1½	5.25	3	5.8	120	60	315
BZ-Removing loading can and plunger from die section	3.3	1½	4.1	4	29	360	129	529
GA-Can cleaning area	-	-	101.4	3	7.7	28	19.6	1990
GA-Pressing area	-	-	300	4	0	28	9	2700
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 11,000

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 21.6$

$d/m/m^3 = 0.31$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Dis Can Cleaning Technician 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP LES	CONCENTRATION d/m ³			AVG CON 'C.' TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
BZ-Disassy of 6 cans and putting in degreaser	8	2 1/2	20	5	51	710	259	5,190
BZ-Cleaning 6 plungers	3.7	2 1/2	9.25	2	8	48	28	259
GA-Can cleaning area	-	-	410.75	3	7.7	28	19.6	8,050
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 13,500

Σ (T x C) / Σ (T) = 26.5

d/m³ = 0.38

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION

(11-4-52)

JOB ANALYSIS SHEET

OPERATOR: Engineer in charge of Pressing 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m ³			AVG CON' C.* TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG.	
GA-Pressing area	-	-	165	3	0	8.3	2.8	461
GA-Office	-	-	275	5	0	7.1	1.4	385
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 868

$$\Sigma \frac{(T \times C)}{\Sigma (T)} = \underline{1.7}$$

$$d/m^3 = \underline{0.02}$$

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Slug Canning Technician 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP- LES	CONCENTRATION d/m ³			AVG CON' C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
BZ-Removing 3 canned slug ex die assy from rack	1	4	4	1	-	-	13	42
BZ-Knocking out 6 canned slugs	3	2	6	1	-	-	230	1380
GA-Canning Op'n area	-	-	320	10	0	89	31.2	9960
GA-Office	-	-	110	5	0	7.1	1.4	154
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0.4	4.4	2.2	22

*Adjusted to two significant figures

Σ T = 510

Σ (T x C) = 11,560

$$\Sigma \frac{(T \times C)}{\Sigma (T)} = \underline{\quad 22.6 \quad}$$

$$d/m^3 = \underline{\quad 0.3 \quad}$$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

(11-9-52)

JOB ANALYSIS SHEET

OPERATOR: Engineer in Charge Canning Operations 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP LES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Canning Op'n Area	-	-	330	10	0	89	31.2	10,300
GA-Office	-	-	110	5	0	7.1	1.4	154
GA-Lunch room	-	-	60	4	0	0	0	
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures $\Sigma T = 510$ $\Sigma (T \times C) = 10,500$

$\Sigma \frac{(T \times C)}{\Sigma (T)} = 21$ $d/m^3 = 0.3$ TIMES THE MAXIMUM ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Powder Preparation Technicians 11 MEN/SHIFT 1 SHIFTS/DAY: 11 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP- LES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (T X C)
					LOW	HIGH	(C) AVG.	
BZ-Removing loaded retort from Ingot Dry Box and replacing with empty retort	2/3	3/4	0.50	3	170	310	230	115
BZ-Removing loaded can from Ingot Dry Box and replacing with empty can	1/6	2/4	0.42	2	130	790	460	193
BZ-Removing empty clip can from Ingot Dry Box and replacing with loaded can	1/6	1-3/5	0.27	2	71	110	90	24
BZ-Removing and replacing screen in Ingot Dry Box	1/3	1/11	0.03	1	-	-	91	2.7
BZ-Removing shaker from Ingot Dry Box and replacing	1	1/11	0.09	1	-	-	161	14.5
BZ-Removing mill hammer from Ingot Dry Box and replacing	1/4	1/11	0.02	1	-	-	57	1.1
BZ-Removing empty retort from Bulk Dry Box and replacing with loaded retort	1.4	3/4	1.05	3	170	480	228	292
BZ-Removing full clip can from Bulk Dry Box and replacing with empty can	0.8	1-3/5	1.3	4	0	140	51	66
BZ-Placing hydride retort into Furgeson furnace	0.9	3/4	0.68	3	120	210	167	114
BZ-Removing retort from Furgeson furnace to cooler	0.5	3/4	0.38	1	-	-	610	232
BZ-Disassy and cleaning of retort	3.5	3/4	2.6	2	63	65	64	166

CONTINUED

*Adjusted to two significant figures

Σ T

Σ (T X C)

$$\Sigma \frac{(T \times C)}{\Sigma (T)} =$$

/M³ =

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Powder Preparation Technicians MEN/SHIFT: _____ SHIFTS/DAY: _____ MEN/DAY: _____

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP LES	CONCENTRATION d/m/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
BZ-Loading Ingot into Ingot Hydriding Furnace	3.0	1/36	0.08	1	-	-	30	2.4
BZ-Removing empty carriage from Ingot Hydriding Furnace	7.0	1/36	0.2	1	-	-	5.9	1.2
GA-Ingot Dry Box Area	-	-	114	6	5.1	16	8.7	1250
GA-Bulk Dry Box area	-	-	114	5	7.1	21	15.8	2160
GA-Ferguson Furnace area	-	-	114	5	8.3	18	12.8	1750
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 6400

Σ $\frac{(T \times C)}{\Sigma (T)}$ = 12.5

d/m/m³ = 0.18

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR Supervisor - Powder Prep Technicians 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. ILES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Powder Preparation Area	-	-	275	23	0	21	11.7	3210
GA-Office	-	-	165	5	0	7.1	1.4	231
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 3460

Σ $\frac{(T \times C)}{\Sigma (T)}$ = 6.8

d/m³ = 0.07

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Engineer in Charge Powder Preparation 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. PLES	CONCENTRATION d/m ³			AVG CON'N ² TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Powder Preparation area	-	-	220	23	0	21	11.7	2570
GA-Office	-	-	220	5	0	7.1	1.4	308
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 2900

$\Sigma \frac{(T \times C)}{\Sigma (T)}$ = 5.7

d/m³ = 0.08

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

JOB ANALYSIS SHEET

OPERATOR: Engineer Powder Preparation 1 MEN/SHIFT 1 SHIFTS/DAY 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP PLES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (TxC)
					LOW	HIGH	(C) AVG	
GA-Office	-	-	165	5	0	7.1	1.4	230
GA-Dry Box Area	-	-	110	11	5.1	21	12	1320
GA-Processing area	-	-	110	61	0	130	15	1650
GA-Machine Shop	-	-	55	6	0	18	3	165
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

ΣT 510

$\Sigma (T \times C)$ 3400

$\Sigma \frac{(T \times C)}{\Sigma (T)} = \underline{\underline{6.7}}$

$d/m^3 = \underline{\underline{0.1}}$

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION

N.Y. 144
 (11-4-50)

JOB ANALYSIS SHEET

OPERATOR: Maintenance 2 MEN/SHIFT 1 SHIFTS/DAY 2 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA (MIN)	OPERA PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP LES	CONCENTRATION d/m ³			AVG CON'C. TIMES TOTAL TIME (T x C)
					LOW	HIGH	(C) AVG	
GA-Processing area	-	-	440	61	0	130	15	6600
GA-Lunch room	-	-	60	4	0	0	0	0
GA-Men's room	-	-	10	2	0	4.4	2.2	22

*Adjusted to two significant figures

Σ T 510

Σ (T x C) 6600

Σ $\frac{(T \times C)}{\Sigma (T)}$ = 13

d/m³ = 0.18

TIMES THE MAXIMUM
 ALLOWABLE CONCEN-
 TRATION

APPENDIX B

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. **A 2956**
DATE SENT July 11, 1953
DATE RECEIVED _____
DATE REPORTED 8/12/53

PLANT Sylvania Electric
American Machine & Foundry
MAILING ADDRESS
Hicksville, L-I,
Brooklyn, N.Y.

TYPE OF SAMPLE
Air Dust
METHOD OF DETERMINATION
CSICIN CTR.

ROUTE RESULTS TO
Klein

ANALYZE FOR
U²³⁵

SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				DATE	TIME	TOTAL					
A017	7/17	1504	6A BLDG. #1 SHOP	20	25	.50	0.4	45	60	<1	—
A018		1528	6A PICKLING ROOM		30	.60	0.4	78	60	<1	—
A019		1541	6A GARD STACK		30	.60	0.4	19	30	<1	—
A020		1541	6A GARD STACK		30	.60	0.4	14	30	<1	—
A021	7/20	0902	B2 Removing loaded retort (Hydride) from inset dry box		3/4	.015	0.4	99	60	1.3	310.
A022		0910	B2- putting hydride retort into furnace		1/3	.0067	0.4	48	60	<1	—
A023		0912	B2- Putting empty retort in inset dry box		1/3	.0067	0.4	37	60	<1	—
A024		0933 1006	6A Eng'ring Room		33	.70	0.4	26	60	<1	—
A025		0933 1006	6A Eng'ring Room		33	.70	0.4	31	60	<1	—
A026		0940	B2- cleaning 6 plungers		3 1/3	.06	0.4	72	60	<1	—
A027		0950	B2- cleaning die and pieces		1 2/3	.04	0.4	67	60	<1	—
A028		1000	B2- removing shaker from inset dry box & replacing		1	.02	0.4	78	60	<1	—
A029		1017 1047	6A Machine Shop		30	.60	0.4	35	60	<1	—
A030		1017 1047	6A Machine Shop		30	.60	0.4	37	60	<1	—

COLLECTED BY Klein

ANALYZED BY N.A.H.

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

SY100075409

U. S. GOVERNMENT PRINTING OFFICE: 1953 - 0000-0000

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. NO. A 2957
DATE SENT July 17, 1953
DATE RECEIVED _____
DATE REPORTED 8/17/53

PLANT		MAILING ADDRESS		ROUTE RESULTS TO		ANALYZE FOR		TYPE OF SAMPLE		METHOD OF DETERMINATION		RESULTS
Sylvania Electric American Machine & Foundry		Hicksville, L.I.		Klein		U ₂		Air Dust		GRIN C.T.K.		
SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS	
				RATE	TIME	TOTAL						
A031	7:20		B2 - cleaning 5 pairs of die leads	20	11 1/2	.11	0.4	309	60	4.8	160	
A032			B2 - Removing retard from Ingot dry box & tropleans		3/4	.015	0.4	62	60	<1	—	
A033			B2 - plating metal in furnace can filter assembly		2	.04	0.4	12.8	60	1.9	170	
A034		11:40 12:10	GA - Roof - vic exhaust house for burnout (10 min)		30	.60	0.4	55	60	<1	—	
A035			B2 - (vis burning during 5/10 min)		1/2	.03	0.4	82	60	1.0	120	
A036		11:53 12:23	GA Machine Shop		30	.60	0.4	207	60	3.4	1.8	
A037		11:53 12:23	GA Machine Shop		30	.60	0.4	42	60	<1	—	
A038		12:10	B2 - cleaning 2 pair die leads		2	.04	0.4	27	60	<1	—	
A039		12:17 12:30	GA - Same as A034 (Prefilter Burned out)		48	1.0	0.4	128	8.60	14	50	
A040		12:30 12:30	GA Shipping & Receiving		40	.80	0.4	62	60	<1	—	
A041		12:30 1:30	GA Shipping & Receiving		40	.80	0.4	61	60	<1	—	
A042		12:35	B2 - Removing retard from furnace to cooler		1/2	.01	0.4	127	60	1.7	610	
A043		1:07 1:37	GA - Same as A034 (Prefilter Burned out)		30	.60	0.4	128	4.20	30	180	
A044		1:34 1:40	GA - Same as A034 (Prefilter Burned out)		30	.60	0.4	147	30	4.5	27	

COLLECTED BY M. Weinstein Klein - L. J. J. J. ANALYZED BY A. H.

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. **A 2958**

DATE SENT _____

DATE RECEIVED _____

DATE REPORTED **8/12/53**

PLANT			MAILING ADDRESS			ROUTE RESULTS TO			ANALYZE FOR			TYPE OF SAMPLE			METHOD OF DETERMINATION		
SYLVANIA			HICKSVILLE			KLEVIN			α			DUST			MPCIN CTR.		
SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS						
				RATE	TIME	TOTAL											
L901	7/16	9:56	GA GENL. OFFICES	20	35	.70	0.4	12	30	51	—						
L902		1009	GA SHIPPING BAY		31	.60	0.4	16	30	<1	—						
L903		1012	GA NW 1 st C'LESS GRINDER		32	.60	0.4	24	15	1.2	7.1						
L904		1021	B2 DISASSEMBLING C CANS AND PUTTING IN DECREASE		7.5	.15	0.4	167	30	5.2	120						
L905		1033	GA GENL. OFFICES		48	1.0	0.4	19	30	<1	—						
L906		1043	GA WALL AND BULK-H. DRY BOX		35	.70	0.4	43	30	1.0	5.1						
L907		1045	GA EXP. PRESS AREA		30	.60	0.4	50	30	1.3	7.7						
L908		1051	B2 UNDERCUTTING 2 PIES		40	.08	0.4	57	30	1.5	67						
L909			B2 KNOCKING OUT 6 SLUGS		5.0	.10	0.4	126	30	3.8	140						
L910			B2 REMOVING 3 CANNED SLUGS FROM PACK		1.0	.02	0.4	34	30	<1	—						
L911			B2 KNOCKING OUT 6 CANNED SLUGS		30	.06	0.4	126	30	3.8	230						
L912		1116	GA OTSU EXP. PRESSES		30	.60	0.4	86	30	2.5	15						
L913		1119	GA BULK-H. DRY BOX AREA		30	.60	0.4	64	41.60	1.1	6.6						
L914		1122	GA GENL. OFFICES		30	.60	0.4	12	30	<1	—						

COLLECTED BY **Loysen - Klewin - Weinstein** ANALYZED BY **M.H.H.**

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REG. No. **A 2959**
DATE SENT _____
DATE RECEIVED _____
DATE REPORTED **8/12/53**

PLANT			TYPE OF SAMPLE									
SYLVANIA			DUST									
MAILING ADDRESS			METHOD OF DETERMINATION									
HICKSVILLE			ASCIN. R.T.K.									
ROUTE RESULTS TO			ANALYZE FOR								RESULTS	
KLEVEN			α									
SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS	
				RATE	TIME	TOTAL						
L915	7/16		BZ KNOCKING OUT 6 SLUGS	20	5	.10	0.4	129	30	3.9	140	
L916			BZ WIRE BRUSH CLEANING 8 SETS END SLUGS		5.5	.11	0.4	43	30	1.0	32	
L917		11:47	CA ROTARY CLEANING TABLE		60	1.2	0.4	104	30	3.1	9.2	
L918		12:48	CA FRONT OF BURNOUT HOOD		43	.90	0.4	18	30	<1	—	
L919		12:01	CA LUNCH ROOM		57	1.1	0.4	38	60	<1	—	
L920		12:51	CA DIE PRAC AREA NEAR ASSEMBLY STATION		42	.80	0.4	279	30	8.9	40	
L921		1300	CA HALL NOT DRINKING FOUNTAIN		36	.70	0.4	53	30	1.4	7.1	
L922			BZ WIRE BRUSH CLEANING 3 LOWER DIE SECTIONS		27	.05	0.4	49	30	1.2	86	
L923			BZ WIRE BRUSH CLEANING 4 ADDITIONAL 3 UPPER DIES		3.1	.06	0.4	135	30	4.1	240	
L924			BZ SAME		3.0	.06	0.4	179	30	5.6	330	
L925		1331	CA BURNOUT HOOD AREA		30	.60	0.4	111	30	3.3	20	
L926		1334	CA NOT SLOG PRESS (MANUFEIN)		30	.60	0.4	128	8.30	15	89	
L927		1338	CA GENL. OFFICES		30	.60	0.4	15	30	<1	—	
L928		1348	BZ WIRE BRUSH CLEANING 6 SETS RE LINERS		7.4	.15	0.4	56	15	3.3	79	

COLLECTED BY: **LOYSEN - Weinstein - Kleven**
ANALYZED BY: **K.H.**

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. A 2960
DATE SENT _____
DATE RECEIVED _____
DATE REPORTED 8/12/53

PLANT			TYPE OF SAMPLE				METHOD OF DETERMINATION				RESULTS
SYLVANIA			Dust				DISCIN CTR				
MAILING ADDRESS			ROUTE RESULTS TO				ANALYZE FOR				
HICKSVILLE			KLEVIN				X				
SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
L929	7/16	1402	6A DRY BOX AREA	20	30	.60	0.4	101	30	3.0	18
L930		1405	6A DIE REASSEMBLY AREA		36	.70	0.4	182	30	5.7	29
L931		1433	02 UNSCREWING 3 DIES AND VACUUMING DRY BACK		8	.16	0.4	267	30	8.5	190
L932		1443	6A ADJ. WIRE BRUSHING WHEELS		39	.80	0.4	369	60	5.8	26
L933		1445	6A DRY BOX AREA		39	.80	0.4	117	60	1.6	7.1
L934		1451	02 REMOVING CANS AND PLANNERS FROM BACK		2.75	.06	0.4	12.8	19.82	6.1	360
L935		1512	02 REASSEMBLING 6 CANS AND CARTRIDGE REFEEDER		9.5	.19	0.4	188	60	2.7	51
L936		1522	6A ADJ. FILING HOOD		32	.60	0.4	12.8	12.30	10	60
L937		1525	6A WEST SIDE FERGUSON FURNACES		30	.60	0.4	123	60	1.7	10
L938		1530	02 UNSCREWING 3 DIES		6.5	.13	0.4	256	60	3.8	100
L939		1537	02 WIRE BRUSH CLEANING LOWER DIE SECTIONS		3.4	.07	0.4	246	60	3.7	190
L940		1546	02 WIRE BRUSH CLEANING UPPER DIE SECTIONS		6.3	.13	0.4	414	60	6.5	180
L941	8/17	0902	6A NORTH OF BULK-H DRY BOX		30	.60	0.4	81	60	1.1	6.6
L942		0905	6A WEST SIDE FERGUSON FURNACES		30	.60	0.4	110	60	1.4	8.3

COLLECTED BY

Loyson - Newsten - Klevin

ANALYZED BY

N. H.

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. **A 2961**
DATE SENT _____
DATE RECEIVED _____
DATE REPORTED **8/12/53**

PLANT
SYLVANIA
MAILING ADDRESS
HICKSVILLE
ROUTE RESULTS TO
KLEVIN

TYPE OF SAMPLE
U DUST
METHOD OF DETERMINATION
ASCIN CTR

ANALYZE FOR
α

SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
L943	7/17	0734	GA. ROT. HOFMAN COLLECTOR	20	24	.48	0.4	1089	60	18	130
L944		0735	GA. VIC. BULK-N DRY BOX		25	.50	0.4	156	60	2.2	16
L945		0739	GA. TOP OF DRY BOX		30	.60	0.4	158	60	2.2	13
L946		0840	GA. COLD PRESSING TABLE WEST OF DRY BOX		30	.60	0.4	219	60	3.3	20
L947		0959	GA. CENTERLESS GRINDER FEED END (OUT FEED)		30	.60	0.4	156	60	2.2	13
L948		1002	GA. CENTERLESS GRINDER DISCHARGE END (W.A.B.)		30	.60	0.4	158	60	2.2	13
L949		1011	GA. SAME AS L945		30	.60	0.4	237	60	3.6	21
L950		1014	GA. CAN REARING AREA TABLE AGAINST WALL		30	.60	0.4	103	60	1.3	7.7
L951		1031	GA. SAME AS L947		30	.60	0.4	215	60	3.7	22
L952		1031	GA. SAME AS L948		30	.60	0.4	211	60	3.1	18
L953		1047	GA. TOP OF BULK-N1 DRY BOX		30	.60	0.4	136	60	1.9	11
L954		1050	GA. REMOVING EMPTY CARTRIDGE FROM BULK-MANING		7.0	.14	0.4	38	60	51	—
L955		1126	GA. SAME AS L947		30	.60	0.4	136	60	1.9	11
L956		1128	GA. SAME AS L948		30	.60	0.4	187	60	2.7	16

COLLECTED BY
Loyser - Weinstein - Klevin

ANALYZED BY
K.A.H.

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. A 2962
DATE SENT _____
DATE RECEIVED _____
DATE REPORTED _____

PLANT		MAILING ADDRESS		TYPE OF SAMPLE		METHOD OF DETERMINATION		RESULTS			
SYLVANIA		HICKSVILLE		DUST		15CM CTR					
ROUTE RESULTS TO				ANALYZE FOR		SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS	
KLEVIN				α							
SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
L957	7/17	0940 1010	GA - Between Furgeson Furnaces	20	30	1.60	0.4	211	60	3.1	18
L958		1009 1039	GA - Metals Lab Room #1		30	.60	0.4	96	60	1.2	7.1
L959		1009 1039	GA - Metals Lab Room #4		30	.60	0.4	97	60	1.2	7.1
L960		1012 1046	GA - GA - East side Furgeson Furnaces		34	.70	0.4	210	60	3.1	16
L961		1044 1114	GA - Metals Lab Room #6		30	.60	0.4	47	60	<1	—
L962		1044 1114	GA - Metals Lab Room #8		30	.60	0.4	46	60	<1	—
L963		1049 1126	GA - East Side Furgeson Furnaces		37	.70	0.4	160	60	2.3	12
L964		1122 1152	GA - Lunch Room [Before Lunch]		30	.60	0.4	31	60	<1	—
L965		1122 1152	GA - Lunch Room [Before Lunch]		30	.60	0.4	35	60	<1	—
L966		1121 1201	GA - Disloading Can Cleaning Area		30	.60	0.4	254	60	3.8	23
L967		1155 1335	GA - Lunch Room [During Lunch]		100	2.0	0.4	29	60	<1	—
L968		1155 1335	GA - Lunch Room [During Lunch]		100	2.0	0.4	257	60	<1	—
L969		1202	Blank				0.4	22	60	<1	—
L970		1206 1345	GA - Loading Can Disassy Cleaning Area Mens Room		98	2.0	0.4	18	60	<1	—
COLLECTED BY				ANALYZED BY							
MS Weinstein - Klevin - Layzer				M.H.							

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. A 2963

DATE SENT _____
DATE RECEIVED _____
DATE REPORTED 8/12/53

PLANT SYLVANIA

MAILING ADDRESS
HICKSVILLE

ROUTE RESULTS TO
KLIVIN

TYPE OF SAMPLE
U RUST
METHOD OF DETERMINATION
W/CIN STR

ANALYZE FOR
L

SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
L971	7/17	1111	BE LOADING HGT INTO DUNKY FURNACE	20	3.0	.66	0.4	54	60	<1	—
L972		1118	CA SOUTH SIDE OF BULK-H DRY BOX		30	.60	0.4	70	60	1.1	6.6
L973		1124	CA SOUTH OF SLUG EJECTION HOOD		30	.60	0.4	174	30	5.4	32
L974		1208	ON PRESSING FOREMAN'S DESK		90	1.8	0.4	36	30	<1	—
L975		1211	CA BILLET STORAGE ROOM		91	1.8	0.4	100	30	2.9	5.8
L976		1340	CA NW IF HGT PRESSES		40	.80	0.4	80	60	<1	—
L977		1342	CA BILLET STORAGE ROOM		40	.80	0.4	26	15	1.3	5.8
L978		1421	CA SW IF HGT PRESSES		30	.60	0.4	109	60	1.4	8.3
L979		1424	OUTSIDE OF BILLET PICKLING ROOM		30	.60	0.4	151	60	2.1	13
L980		1425	CA PLATING ROOM		31	.60	0.4	97	60	1.2	7.1
L981		1428	CA ABOVE DECREASED CAN CLEANING AREA		30	.60	0.4	266	60	4.7	28
L982		1429	CA'S FRONT OF BURN-OUT HOOD (RUST ESCAPING)		32	.60	0.4	242	60	3.6	21
L983		1453	CA PLUNGER COOLING AREA		32	.60	0.4	304	60	4.7	28
L984		1455	CA PICKLING ROOM		35	.70	0.4	139	60	1.9	9.7

COLLECTED BY Lois Weintraub - Klein

ANALYZED BY N.A.H.

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NEW YORK 23, N. Y.

SAMPLE REQ. No. A 2964
DATE SENT _____
DATE RECEIVED _____
DATE REPORTED 8/12/53

PLANT SYLVANIA			MAILING ADDRESS HICKSVILLE			TYPE OF SAMPLE 0 PIST			METHOD OF DETERMINATION DISCIN-CTR		
ROUTE RESULTS TO KEVIN			ANALYZE FOR CPM			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS	
SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	RATE	TIME						TOTAL
L985	7/17	1344 1430	6A - Mln Room	20	46	.90	0.4	45	30	1.1	4.4
L986		1424 1501	6A - Nurses Office		35	.70	0.4	2.4	30	<1	—
L987		1426 1501	6A - Nurses Office		35	.70	0.4	13	30	<1	—
L988		1433 1512	6A - Machine Shop near Tank Storage Room		39	.90	0.4	4.6	30	1.1	4.9
L989		1057	6A PLATING ROOM		30	.60	0.4	82	30	2.3	14
L990		1459	6A HYDROGEN PURIFICATION ROOM		30	.60	0.4	24	30	<1	—
L991		1509 1537	6A Hydrogen Purification Room		30	.60	0.4	27	30	<1	—
L992		1516 1546	6A - Tank storage Room		30	.60	0.4	16	30	<1	—
L993		1516 1536	6A - Tank Storage Room		30	.60	0.4	9	15	<1	—
L994		1542 1606	6A - Enginng Room		24	.48	0.4	47	15	2.7	20
L995	7/20	1020	B2 - stamping 6 slugs		15/6	.04	0.4	38	30	<1	—
L996		1030	B2 - Filing 4 slugs		2 3/4	.06	0.4	30	30	<1	—
L997		1053 1146	6A - Machine Shop		53	1.1	0.4	2.4	30	<1	—
L998		1053 1146	6A - Machine Shop		53	1.1	0.4	5.7	60	<1	—

COLLECTED BY W.W. Lindgren - Kevin - Lypson ANALYZED BY 4711

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UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. A 2967
DATE SENT July 17, 1953
DATE RECEIVED _____
DATE REPORTED _____

PLANT <u>Sylvania Electric</u>				TYPE OF SAMPLE <u>Air Dust</u>								
MAILING ADDRESS <u>Hicksville, N.Y.</u>				METHOD OF DETERMINATION <u>PERSON CTR</u>								
ROUTE RESULTS TO <u>Klein</u>				ANALYZE FOR <u>U</u>							RESULTS	
SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	d./m./y.	
				RATE	TIME	TOTAL						
A045	7/20	1345	B2 - putting re-act into Ferguson Furnace	20 10m	1/3	.0067	0.4	28	60	<1	—	
A046		1350	B2 - stamping 5 slugs		1	.02	—	105	—	—	—	
A047		1355	B2 - grinding 6 slugs		2	.04	0.4	75	60	<1	—	
A048		1400	B2 - Filing 6 slugs		2 1/2	.06	0.4	53	60	<1	—	
A049			Blank		3		0.4	23	60	<1	—	
A050		1420	B2 - Duffing mill handles in inset dry box		1/4	.005	0.4	29	60	<1	—	
A051	7/21	0925	B2 - Removing empty cars from bulk dry box		1/2	.01	0.4	21	60	<1	—	
A052		0930	B2 - Agrodaging a complete die assy		4	.08	0.4	35	60	<1	—	
A053		1000	B2 - cleaning 6 plungers		4	.08	0.4	35	60	<1	—	
A054		1045	B2 - Removing & replacing screen in inset dry box		1/3	.0067	0.4	31	60	<1	—	
A055		110	B2 - cleaning 3 parts of die with rotary chromobrush		2	.04	0.4	34	60	<1	—	
A056		1205	B2 - Same as A055		2	.04	0.4	39	30	<1	—	
A057		1210	B2 - Agrodaging die parts		1 1/2	.03	0.4	14	30	<1	—	
A058		1215	B2 - Same as A057		1 1/2	.03	0.4	20	30	<1	—	
COLLECTED BY <u>M. J. W. Conner - Larsen - Klein</u>							ANALYZED BY <u>N.A.H.</u>					

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UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. A 2968
DATE SENT July 17, 1953
DATE RECEIVED
DATE REPORTED 8/12/53

PLANT <u>Sylvania Electric</u>				TYPE OF SAMPLE <u>Air Dust</u>									
MAILING ADDRESS <u>Hicksville, L.I.</u>				METHOD OF DETERMINATION <u>CYSCIN. CTK</u>									
ROUTE RESULTS TO <u>Klein</u>				ANALYZE FOR <u>V₀</u>									
SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS		
				RATE	TIME	TOTAL							
✓ A059	7/21	1400	BZ - loading 3 empty cans into Ingot dry box	20	min	.01	0.4	2.1	30	<1	—		
✓ A060	7/21	1400	BZ - Removing & Replacing clip cans from Bulk dry box	1	1/2	.02	0.4	1.9	30	<1	—		
✓ A061	7/21	1412	BZ - Removing & Replacing retort from bulk dry box	2	1/2	.04	0.4	1.8	60	2.8	250		
✓ A062	7/21	1420	BZ - Removing 3 loaded cans from Ingot Dry Box	1/2	1/2	.01	0.4	2.3	30	<1	—		
✓ A063	7/21	1430	BZ - Same as A059	1/2	1/2	.01	0.4	3.1	60	<1	—		
✓ A064	7/21	1433	BZ - Same as A060	1	1/2	.02	0.4	3.2	60	<1	—		
✓ A065	7/21	1445	BZ - Removing & replacing 3 loaded cans from Ingot Dry box	1/2	1/2	.01	0.4	15.5	60	2.2	790		
✓ A066	7/21	1450	BZ - Same as A061	5/6	1/2	.02	0.4	18.4	60	2.7	480		
✓ A067	7/21	1500	BZ - Disassy & Cleaning of Retort	4	1/2	.08	0.4	10.6	60	1.4	63		
✓ A068	7/21	1525	BZ - Disassy of 3 loading cans	3 1/2	1/2	.07	0.4	4.14	60	6.5	330		
✓ A069	7/21	1530	BZ - Same as A060	2/3	1/2	.013	0.4	5.4	60	<1	—		
✓ A070	7/21	1535	BZ - Same as A061	1/4	1/2	.03	0.4	1.8	60	1.4	170		
✓ A071	7/21	1545	BZ - Same as A067	3	1/2	.06	0.4	8.8	60	1.1	65		
✓ A072	7/21		Blank				0.4	2.1	60	<1	—		
COLLECTED BY <u>Wm. H. W. W. - Klein - Layzer</u>							ANALYZED BY <u>W.H.</u>						

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UNITED STATES ATOMIC ENERGY COMMISSION
NEW YORK OPERATIONS OFFICE
HEALTH AND SAFETY DIVISION
P. O. BOX 30, ANSONIA STA.
NEW YORK 23, N. Y.

SAMPLE REQ. No. **A 2969**
DATE SENT July 17, 1953
DATE RECEIVED
DATE REPORTED 8/12/53

PLANT Sylvania Electric Corp.				52				TYPE OF SAMPLE Air Dust			
MAILING ADDRESS Hicksville, L.I.								METHOD OF DETERMINATION GCSCIN & TR			
ROUTE RESULTS TO Klein				ANALYZE FOR U²³⁵				RESULTS			
SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
D925	7/17		Address Moving Plant To Dump grounds in site	20	4	0.8	0.4	13	3.0	<1	—
D926			Same as D925		4	0.8	0.4	44	3.0	1.2	54
D927			Address. Removing Blowgas from cans		4	0.8	0.4	32	3.0	<1	—
D928			Same as D927		2 1/2	0.5	0.4	2.4	3.0	<1	—
D929			DISASSEMBLY of LOADING cans		4	0.8	0.4	68	30	1.9	85
D930			Same as D929		4	0.8	0.4	128	7.70	16	710
D931			Same as D929-26		4 1/2	0.9	0.4	100	30	2.9	120
D932			Same as D927-D928		4	0.8	0.4	148	60	2.1	94
D933											
D934											
D935											
D936											
D937											
D938											
COLLECTED BY Klein - Loren - W...				ANALYZED BY ...							

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

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AC:RAM:mas

1st Review Date <u>1/10/62</u> Author: <u>RAM</u> Name: <u>RAM</u> 2nd Review Date <u>1/10/62</u> Author: <u>RAM</u> Name: <u>RAM</u>	Disposition (Circle Number) 1. Classification (unchanged) 2. Classification changed to: <input checked="" type="checkbox"/> Unrestricted <input type="checkbox"/> Other: <u>CC-MR-2</u>
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UNCLASSIFIED

JAN 12 1962

Mr. D. B. Weis, Manufacturing Manager
 Sylvaer Division
 Sylvaer Electric Products Inc.
 Ricksville, L. I., New York

Document No. RA-4-113
 This document consists of 2 pages
 No. 4 of 2 copies, Section A

Dear Mr. Weis:

Reference is made to Appendix "T" to Modification No. 19 under Contract
 AT(00-1)-1113 and the following correspondence:

Conclusion letter of November 20, 1961, from E. C. Hlad to D. B. Weis
 Sylvaer letter of November 8, 1961, from D. B. Weis to E. C. Hlad
 Conclusion teletype of December 15, 1961, from E. C. Hlad to D. B. Weis
 Sylvaer letter of December 18, 1961, from D. B. Weis to E. C. Hlad
 Sylvaer letter of January 2, 1962, from E. C. Hlad to E. C. Hlad

The above-referenced documents cover requested scope of work changes
 subsequent to Modification No. 19 to the contract. Since the changes
 in these documents represent both increases and decreases in the scope
 of work and variations to original requests, it is considered desirable
 that the revised estimated cost for the work during the period December 1,
 1961, through March 31, 1962, be consolidated under one document.

The production levels for the North VII-4 and North V-3 programs for the
 period December 1961 through March 1962 are established as follows:

UNCLASSIFIED	North V-3	North VII-4
December	10	60
January	10	60
February	10	101
March	10	103

Continuing prior discussions between members of our respective staffs, you
 are authorized to proceed with the performance of the work as outlined
 above and requested to submit to this office your revised proposal covering
 the period December 1961 through March 1962. Your proposal should include
 an estimated cost schedule (similar to the schedule previously submitted in
 your December 8 proposal) of all program authorized during the period

APPROVED: <u>[Signature]</u> DATE: <u>1/10/62</u>	APPROVED: <u>[Signature]</u> DATE: <u>1/10/62</u>	APPROVED: <u>[Signature]</u> DATE: <u>1/10/62</u>	APPROVED: <u>[Signature]</u> DATE: <u>1/10/62</u>
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USDOE 017477

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Mr. B. B. Metz

- 2 -

JAN 12 1962

December 1, 1961, through March 31, 1962, together with a revised fee calculation. It is understood that the effective date for the scope of work changes covered herein is December 1, 1961.

Your immediate consideration of this matter is requested. It is desirable that your proposal reach this office by January 24, 1962.

Sincerely yours,

(Signed) H. L. V...
R. C. Blair for R. C. Blair
Manager

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USDOE 017478

Office Memorandum

UNITED STATES GOVERNMENT

UNCLASSIFIED

DATE JUN 14 1963

TO: J. P. Hopkins, Director
Administrative Division
FROM: *A. Y. Morgan*
A. Y. Morgan, Director
Budget & Finance Division

SUBJECT: REVIEW OF SYLOR'S PROPOSAL P-63-4 DATED MAY 28, 1963

Document No. SR-2000

FB:MER:ac

This document consists of 5 pages.

We have reviewed Sylor's proposal (P-63-4) which covers a revised scope of work for the five months period ending September 30, 1963, and submit the following comments, cost analysis, recommendation and contract finance data.

Comments and Cost Analysis

1. The change in scope for the five months period is as follows:

- (a) Increase in Mark V-B canning from 420,000 to 570,000 pounds.
- (b) Machine 2,000 thorium slugs.
- (c) Perform development work on recovery of 5,000 inner-ribbed Mark V-B fuel elements.
- (d) Strip the cladding from 1,400 thorium slugs.
- (e) Perform additional development work on zircaloy cladding by the hot pressure bonding method.
- (f) Build 300 Mark V-E dingot elements for experimental purposes.

With the exception of the Mark V-B increase, the other increases in scope are small.

To accomplish the increase in scope for the five months period requires an increase in cost as follows:

DEPARTMENT OF ENERGY SAVANNAH REACTOR DECLASSIFICATION REVIEW	
1st Review Date: 4/3/63	Determination (Circle Number)
Authority: EADG (ADD)	1. Classification Unchanged
Name: O. B. Black	2. Classification changed to:
2nd Review Date: 4/3/63	3. Classification Canceled
Authority: ADD	4. Other: CG-NHP-2 3-00
Name: Herman J. Gordon	

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~~RESTRICTED DATA~~

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USDOE 017854

	March 20, 1963 Estimate P-63-3	May 28, 1963 Estimate P-63-4	Change + or -
Direct Labor	\$ 431,220	\$ 419,880	\$(11,340)
Direct Materials	362,280	390,760	28,480
Overhead	465,170	457,220	(7,950)
G & A	82,100	82,260	160
Total	<u>\$1,340,770</u>	<u>\$1,350,120</u>	<u>\$ 9,350</u>
Fee	80,446	81,008	562
Purchased Equipment	109,800	119,900	10,100
Total	<u>\$1,531,016</u>	<u>\$1,551,028</u>	<u>\$ 20,012</u>

The revised estimate reflects a considerable improvement in unit cost for Mark V-B for the contract year as compared to their estimate of March 20, 1963. Sylcor informed us that this is possible because of much faster results than had been anticipated from automation, improvement in material prices, etc. The increased cost for purchased equipment represents a reallocation of costs from prior months of approved projects.

A comparison of the total estimates for the year ending 9/30/63 is as follows. The estimates in P-63-4 reflect actual cost through April 1963.

Mark VII-A	\$ 439,704	\$ 439,704	\$ -
Mark V-B	2,032,994	2,089,494	56,500
Mark V-E	307,230	289,316	(17,914)
Thorium Canning	141,588	122,518	(19,070)
Development	302,012	313,522	11,510
Fabricated Equipment	195,152	177,870	(17,282)
Tooling	74,273	51,720	(22,553)
Purchased Equipment	199,319	199,300	(19)
Total Costs (inc. fee)	<u>\$3,692,272</u>	<u>\$3,683,444</u>	<u>\$ (8,828)</u>

<u>Fee Base</u>			
Direct Labor	\$1,068,180	\$1,056,840	\$(11,340)
Direct Materials	893,530	922,010	28,480
Overhead	1,136,620	1,128,670	(7,950)
G & A	197,360	197,520	160
Adjustment (Thorium)	(7,960)	(7,960)	-
Total	<u>\$3,287,730</u>	<u>\$3,297,080</u>	<u>\$ 9,350</u>
Fee @ 6%	<u>\$ 197,263</u>	<u>\$ 197,825</u>	<u>\$ 562</u>

3,483,444
197,825
3,485,619

Unit Costs

	<u>12 Months</u>		<u>May to September</u>	
	<u>P-63-3</u>	<u>P-63-4</u>	<u>P-63-3</u>	<u>P-63-4</u>
<u>V-B</u>				
Estimated Cost	\$2,032,994	\$2,089,494	\$825,248	\$885,800
Production Lbs.	957,200	1,148,323	420,000	570,000
Unit Cost	\$2.12	\$1.82	\$1.96	\$1.55
<u>V-E</u>				
Estimated Cost	\$ 307,230	\$ 289,316		
Production Lbs.	108,000	108,000		Same
Unit Cost	\$2.84	\$2.67		

As pointed out previously, Sylcor has informed us that this significant improvement in unit cost for both the V-B and V-E elements is due to improvement in material prices, earlier achievement of automation than previously anticipated, and other technological improvements.

Through the month of April, Sylcor has met or exceeded the production as established in their proposals which have been revised three times since October 1, 1962. With the exception of the months of March and April, their actual cost subject to fee has been very close to their estimates as follows:

	<u>Fee Base</u>		
	<u>Oct.-Nov.</u>	<u>Dec.-Feb.</u>	<u>Mar.-Apr.</u>
<u>Estimates</u>			
Direct Labor	\$174,890	\$279,940	\$182,130
Direct Material	138,250	238,290	154,710
Overhead	184,760	280,640	206,050
G & A	30,110	50,420	34,730
Total	<u>\$528,010</u>	<u>\$849,290</u>	<u>\$577,620</u>
<u>Actual</u>			
Direct Labor	\$176,054	\$272,932	\$180,560
Direct Materials	148,068	208,115	150,648
Overhead	175,279	316,230	191,054
G & A	29,807	49,843	37,609
Total	<u>\$529,208</u>	<u>\$847,120</u>	<u>\$559,871</u>

The underrun in March and April resulted primarily from an adjustment in Workmen's Compensation Insurance, which was not anticipated at the time of the preparation of the March 20, 1963 proposal.

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JUN 14 1963

Recommendation

The Sylcor proposal should be accepted as submitted because a significant increase in Mark V-B scope is proposed with small increases in other activities and all this will be accomplished with a very small change in dollars.

Change in Obligations

Obligations under the contract should be decreased by \$8,828 computed as follows:

Net Cost Undermin	\$ (9,390)
Increase in Fee	562
Net Decrease in Oblig.	\$ (8,828)

Contract Cover Sheet

The contract cover sheet should be changed to read as follows:

	<u>SROO</u>	<u>NYOO</u>	<u>Total</u>
Previous Direct Cost (Mod. 33)	\$22,705,188	\$3,951,805	\$26,656,993
This Modification Decrease	(9,390)	-0-	(9,390)
New Total Direct Costs	<u>\$22,695,798</u>	<u>\$3,951,805</u>	<u>\$26,647,603</u>
Previous Fixed Fee	\$ 1,315,903	\$ 172,150	\$ 1,488,053
This Mod. Increase	562	-0-	562
New Total Fixed Fee	<u>\$ 1,316,465</u>	<u>\$ 172,150</u>	<u>\$ 1,488,615</u>
Total Estimated Cost and Fixed Fee	<u>\$24,012,263</u>	<u>\$4,123,955</u>	<u>\$28,136,218</u>
Total Obligated 6/30/63			<u>\$28,136,218</u>

Contract Articles

1. Paragraph 1, Estimate of Cost and Fixed Fee, of Article IV - Estimates of Costs, Obligation of Funds, and Fixed Fee should be changed to read as follows:

- (1) Estimate of Cost and Fixed Fee - The presently estimated cost of the work under the contract is \$26,647,603, exclusive of the contractor's fixed fee. The contractor's fixed fee as set forth in Paragraph 2, Article V of the contract is \$1,488,615. The estimated cost of the work as described in Paragraph 1 of the Article entitled Scope of Work for the period October 1, 1962 to September 30, 1963 is \$3,485,619, exclusive of the contractor's fixed fee of \$197,825.

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USDOE 017857

JUN 14 1963

2. In subparagraph (d) of Paragraph 2, Fixed Fee, of Article V - Allowable Cost and Fixed Fee, change fee to read \$197,825.

3. Subparagraph (d) of Paragraph 2, Payment of Fixed Fee, of Article VI- Payments should be changed to read as follows:

(d) Ninety percent (90%) of the fixed fee of \$197,825 shall be due and payable in monthly installments as follows:

For period October 1, 1962 to February 28, 1963	\$14,975
For period March 1, 1963 to April 30, 1963	14,666
For period May 1, 1963 to September 30, 1963	14,767

cc: J. J. Wise, Asst. Manager for Admin.
N. J. Donahue, T&P Division
E. W. Stark, Accounting Branch
R. A. Messick, Contract Fin. Branch

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USDOE 017858

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UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *A. Y. Morgan*
A. Y. Morgan, Director
Budget and Finance Division

DATE: JUN 20 1964

SUBJECT: REVIEW OF SYLCOR PROPOSAL P-64-6

Document No. SR-FD-1064

FB:MER:ac

This document consists of 5 pages.

No. 1 of 2 copies. Series A

We have reviewed Sylcor's proposal (P-64-6 of June 11, 1964, revised by teletype of June 22, 1964).

The following scope changes, cost analysis, conclusion, and contract finance information are submitted for your consideration in preparing a modification to the contract.

Scope changes from P-64-4 as authorized in teletype from Blair to Metz on March 13, 1964 are as follows. The Mark V-E scope change was authorized in the March 13, 1964 teletype.

DEPARTMENT OF ENERGY - SAVANNAH RIVER REACTOR DIVISION - HIGH REVIEW

Determination (Circle Number)
1. Classification Unchanged
2. Classification changed to:
3. Classification Cancelled
4. Other: CG-NAP-7

1st Review Date: 4/15/63
Authority: EJ ADD
Name: J.G. Blair

2nd Review Date: 4/15/63
Authority: ADD
Name: Debra L. Debra

(A) Scope Changes

- (1) Increase in Mark V-E tonnage by 14 tons
- (2) Machining and canning of 7,000 thorium slugs
- (3) Production of 190 sets of Mark V-B extended length slugs
- (4) Deletion of Process Development after May 31, 1964

(B) Cost Changes

To accomplish the above net change in scope, Sylcor estimates a net increase in cost subject to fee of \$62,810 with an increase in fee of \$3,769. We believe this increase to be reasonable and justified.

Analysis of Change in Fee Base P-64-6

	P-64-6 Proposed		P-64-4 Current		Change	
	Cost	Fee	Cost	Fee	Cost	Fee
Mark V-E	\$1,252,860	\$ 75,172	\$1,265,560	\$ 75,934	\$(12,700)	\$ (762)
Mark V-B (Reg.)	920,450	55,227	935,215	56,113	(14,765)	(886)
Mark V-B (Long)	64,030	3,842	-	-	64,030	3,842
Dev.	90,850	5,451	103,620	6,217	(12,770)	(766)
Tooling	650	39	5,755	345	(5,105)	(306)
Thorium	53,250	3,195	11,200	672	42,050	2,523
Equip.	114,320	6,859	112,250	6,735	2,070	124
Adj. Zirc. (Prior)	(1,800)	(108)	(1,800)	(108)	-	-
Total	\$2,494,610	\$149,677	\$2,431,800	\$145,908	\$ 62,810	\$3,769



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J. S. Hopkins

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JUN 20 1964

Fee Base	10/1/63	2/1/64	6/1/64	Total
	1/31/64	5/31/64	9/30/64	
	P-64-2	P-64-4	P-64-6	
Direct Labor	\$ 333,930	\$237,530	\$197,500	\$ 769,010
Direct Mat.	283,380	211,200	181,800	676,380
Overhead	355,240	294,370	248,230	897,840
G & A	69,430	56,830	49,970	176,230
Total	<u>\$1,042,030</u>	<u>\$799,930</u>	<u>\$677,500</u>	<u>\$2,519,460</u>
Adjustments				
Tooling (P-64-4)				\$ (12,000)
Tooling (P-64-6)				(2,750)
Fab. Equip. (P-64-4)				(8,300)
Dev. Prior (P-64-2)				(1,300)
Net Fee Base				<u>\$2,494,610</u>
Fee @ 6%				\$ 149,677

In their proposal P-64-6 Sylcor had included in their fee base some \$3,380 for Du Pont Tooling. In discussions with Sylcor it was agreed that the tooling program was to be discontinued after only a small amount of work and the tooling amount in the fee base would be decreased by \$2,750. The other adjustments listed above were negotiated in prior contract periods.

The revised estimated cost including fee for the contract period is compared to the currently estimated cost in the following table. The amounts in the column P-64-4 include actual cost through January 31, 1964, and in P-64-6 actual costs are included through May 31, 1964.

	P-64-4	P-64-6	Increase or (Decrease)
Mark V-E	\$1,381,269 ^{a/}	\$1,383,007 ^{a/}	\$ 1,738
Mark V-B - Regular	986,313	977,326	(8,987)
Mark V-E - Long	-0-	67,872	67,872
Development	120,509	110,567	(9,942)
Thorium	18,172	62,752	44,580
Tooling	6,145	674	(5,471)
Subtotal	<u>\$2,512,408</u>	<u>\$2,602,198</u>	<u>\$ 89,790</u>
Fab. Equipment	\$ 90,300	\$ 86,878	\$ (3,422)
Purchased Equipment	87,900	63,700	(24,200)
Subtotal	<u>\$ 178,200</u>	<u>\$ 150,578</u>	<u>\$ (27,622)</u>
Total Cost	<u>\$2,691,108</u>	<u>\$2,752,776</u>	<u>\$ 61,668</u>

^{a/} Includes fee on fabricated equipment of \$6,735 and \$6,359, respectively.

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J. S. Hopkins

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JUN 26 1964

	P-64-4	P-64-6	Increase or (Decrease)
<u>Production (Delivered)</u>			
Mark V-E - Tons	338	352	14
Mark V-B - Reg. - Tons	363	363	-0-
Mark V-B - Long - Sets	-0-	190	190
Thorium Slugs - Old Program	2,794	2,794	-0-
Thorium Slugs - New Program	-0-	7,000	7,000
<u>Unit Cost (Actual Cost & Production)</u>			
Mark V-E Lb.	\$2.11	\$2.03	\$(.08)
Mark V-B Lb. - Reg.	1.35	1.31	(.04)
Thorium (New) Lb.	-0-	2.23	-0-
Thorium (Old) Lb.	3.21	-0-	-0-

The unit costs for the major products remain relatively stable -- the slight decrease being due to the added activities which bear a portion of fixed overhead.

The unit price on old thorium slugs is that experienced in the period from July to December 1964. A unit cost on a per-slug and per-pound basis is as follows between the old and the new thorium:

	<u>Old</u>	<u>New</u>
Total Cost	\$72,589	\$44,573
Production Lbs.	22,619	20,000
Production Slugs	11,793	7,000
Unit Cost/Slug	\$6.15	\$6.36
Unit Cost/Lb.	\$3.21	\$2.23
<u>Personnel Man-Months</u>		
Direct	1,399	1,637
Expense	227	217
Total	<u>1,826</u>	<u>1,854</u>
No. of Personnel Year End 9/30/64	118	113

It is assumed from the above that the increased work will be performed with overtime or a better utilization of labor will be made than previously anticipated.

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J. S. Hopkins

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JUN 20 1964

Overhead - Direct Labor Ratios

	Actual 10/1/63 5/30/64	Actual May 1964	Fee Base Estimate 10/1/63 - 5/30/64	
			P-64-2	P-64-6
Direct Labor	\$534,000	\$ 50,000	\$733,000	\$769,000
Overhead	669,000	62,000	873,000	898,000
Ratio	129%	124%	119%	117%

The actual overhead ratio expected to be experienced in the contract period is as follows:

Direct Labor	<u>P-64-6</u> \$732,000
Overhead	937,000
Ratio	128%

Based on actual overhead experience, the amount included in the base for fee is not considered unreasonable.

(C) Conclusion

We accept Sylcor's proposal (P-64-6 as revised by teletype of 6/22/64) as submitted since a significant increase in scope is to be obtained with only a modest increase in cost and fee.

In future proposals consider elimination of fee on fabricated equipment and request that Sylcor be more comprehensive in analyzing changes.

(D) Contract Finance Information

<u>Cost & Fee by Activity</u>	<u>Cost</u>	<u>Fee</u>	<u>Total</u>
Mark V-E	\$1,300,976	\$ 82,031a/	\$1,383,007
Mark V-B - Regular	922,099	55,227	977,326
Mark V-B - Long	64,030	3,842	67,872
Thorium - Old Program	17,507	672	18,179
Thorium - New Program	42,050	2,523	44,573
Development	105,224	5,343	110,567
Tooling	635	39	674
Fabricated Equipment	86,878	a/	86,878
Purchased Equipment	63,700	-0-	63,700
Total	<u>\$2,603,099</u>	<u>\$149,677</u>	<u>\$2,752,776</u>

a/ Includes \$6,859 fee on fabricated equipment.

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J. S. Hopkins

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JUN 20 1964

Recap of Revised Costs and Commission Obligation

Summary of Estimated Costs and Fixed Fees

	<u>Mod. 36</u>	<u>Incr. (Decr.)</u>	<u>Mod. 37</u>
Operating Cost	\$29,049,454	\$60,519	\$29,109,973
Plant & Capital Equipment (Beginning 7/1/63)	216,289 ^{a/}	-0-	216,289 ^{a/}
Fixed Fee (Operations)	1,634,523	3,769	1,638,292
Total Est. Cost & Fixed Fee	<u>\$30,900,266</u>	<u>\$64,288</u>	<u>\$30,964,554</u>
Commission Obligation	\$30,870,266	\$64,288	\$30,934,554

^{a/} Includes \$30,000 for first quarter FY 1965 authorizations.
not to be obligated in FY 1964.

Contract Articles

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE, is revised as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$29,326,262, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,638,292. The estimated cost of the work as described in paragraph 1. of the article entitled SCOPE OF WORK for the period October 1, 1963, to September 30, 1964, is \$2,603,092, exclusive of the Contractor's fixed fee of \$149,677."

2. In paragraph 2., Obligation of Funds, of Article IV - ESTIMATES OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$30,870,266" is deleted and the figure "\$30,934,554" is substituted therefor.

3. Subparagraph (e) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE, is revised to read as follows:

"(e) The fixed fee applicable to work performed during the period October 1, 1963, to September 30, 1964, is \$149,677."

4. Subparagraph (e) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS, is revised to read as follows:

"(e) For the period October 1, 1963, through September 30, 1964, ninety percent (90%) of the fixed fee of \$149,677 shall become due and payable in monthly installments as follows:

October 1963 - December 1963	\$13,883
January 1964 - May 1964	3,963
June 1964 - September 1964	10,311

cc: J. J. Wise, Asst. Mgr. for Adm.
N. J. Donahue, T&P Div.
E. W. Stark, Acctg. Br.
R. A. Messick, Contract Fin. Br.

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No. 8 of 10 copies, Series A.

SR-A-151

DEPARTMENT OF ENERGY - SAVANNAH RIVER UNCLASSIFICATION OFFICE	
1st Review Date <u>3-28-65</u>	Determination (Circle Number)
Authority: <u>EAIC UADD</u>	1. Classification Unchanged
Name: <u>J. B. Slack</u>	2. Classification changed to:
2nd Review Date <u>12-03</u>	3. Classification Canceled
Authority: <u>AID</u>	4. Other: <u>CG-NRP-2</u> 9/60
Name: <u>J. M. Henson</u>	

APPENDIX "B" TO MODIFICATION NO. 29
CONTRACT NO. AT(30-1)-1293
REVISED JANUARY 1, 1965, UNDER
MODIFICATION NO. 40

The scope of work to be performed by the Contractor during the period October 1, 1964, through September 30, 1965, as set forth by Modification No. 39 is revised to read as follows:

1. PRODUCTION

A. MARK V-B AND MARK V-E (Inner Fuel)

The Contractor shall manufacture and furnish to the Commission Mark V-B and Mark V-E slugs at monthly tonnages as follows:

	<u>Mark V-B (Tons)</u> <u>Integral Rib</u>	<u>Mark V-E (Tons)</u> <u>Integral Rib</u>
October	21	26
November	18	22
December	15	23
January	10	20
February	-	21
March	-	23
April	-	21
May	-	21
June	-	21
July	-	9
August	-	21
September	-	20

B. EXTENDED LENGTH MARK V-B SLUGS

Undertake the canning of 560 sets of extended length Mark V-B slugs for delivery in accordance with the following schedule:

75 sets by October 19, 1964
175 sets by December 14, 1964
310 sets by February 28, 1965

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~~NO UNCLASSIFIED PERSON TO PRODUCE~~

2-12-64
JPH

USDOE 017348

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UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *J. Y. Morgan*
A. Y. Morgan, Director
Budget and Finance Division

SUBJECT: REVIEW SYLOR PROPOSAL P-65-2 (REVISED)

DATE: JAN 20 1965

Document No. SR-EB-1107

This document consists of 4 pages.

No. 1 of 7 copies. Series A

We have reviewed Sylcor's proposal P-65-2 of December 11, 1964 (DCF 2646-H) for the period October 1, 1964 to September 30, 1965 and submit the following for your consideration in preparation of a modification to the contract.

DEPARTMENT OF ENERGY - SAVANNAH RIVER DECLASSIFICATION REVIEW	
1st Review Date <u>4/3/07</u>	Determination (Circle Number)
Authority: <u>EAAD</u> <input type="checkbox"/> <u>ADD</u> <input type="checkbox"/>	1. Classification Unchanged
Name: <u>J.B. Slack</u>	2. Classification changed to:
2nd Review Date <u>4/3/07</u>	
Authority: <u>ADD</u>	<input checked="" type="radio"/> 3. Classification Canceled
Name: <u>William T. Dodson</u>	4. Other: <u>CG-NM2</u> <u>9-00</u>

A. Scope Changes

- (1) Mark V-B reduction - 164 tons
- (2) Mark V-E reduction - 28 tons
- (3) Equipment - \$30,000 cost reduction

The production of Mark V-B is discontinued after January 1965. For the period February 1965 through September 30, 1965, the only production by Sylcor will be Mark V-E at the rate of about 20 tons per month.

The reduction in scope as outlined above results in a net reduction in costs subject to fee for the period of \$281,900 and a fixed fee reduction of \$16,914 as follows:

	Estimates P-65-1		Estimates P-65-2		Change	
	Cost	Fee	Cost	Fee	Cost	Fee
Mark V-E	\$ 858,020	\$51,482	\$ 922,930	\$55,376	\$ 64,910	\$ 3,894
Mark V-B Reg.	510,090	30,605	169,380	10,163	(340,710)	(20,442)
Mark V-B 12"	100,110	6,006	97,660	5,860	(2,450)	(146)
Thorium	5,760	345	5,760	345	-0-	-0-
Fab. Equipment	49,600	2,977	45,950	2,757	(3,650)	(220)
Total	<u>\$1,523,580</u>	<u>\$91,415</u>	<u>\$1,241,680</u>	<u>\$74,501</u>	<u>\$(281,900)</u>	<u>\$(16,914)</u>

Although there is a net reduction in Mark V-E production, total costs increase because (a) V-E must assume essentially all indirect costs after February 1965, and (b) to maintain continuity in the canning process requires a certain minimum level of personnel. This involves the absorption of about seven direct people in the V-E canning costs after other V-B work is discontinued.



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Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

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J. S. Hopkins

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JAN 20 1965

<u>Personnel</u>	<u>P-65-1</u>	<u>P-65-2</u>	<u>Change</u>
<u>Man-Months</u>			
V-E	552	593	41
V-B Reg.	341	111	(230)
V-B 12"	66	55	(11)
Thorium	5	17	12
Equipment	41	46	5
Expense	156	122	(34)
Total	<u>1,161</u>	<u>944</u>	<u>(217)</u>
Ending 9/30/65	<u>89</u>	<u>61</u>	<u>(28)</u>

Overhead Direct Labor Totals and Ratios

	<u>P-65-1</u>	<u>P-65-2</u>	<u>Oct.-Nov. Actual</u>
Direct Labor	\$442,530	\$364,228	\$ 87,858
Overhead	644,720	556,178	113,368
Ratio OH to DL	146.0%	153.0%	129.0%

Based on a declining level of operation we consider the overhead total and ratio to be reasonable. The more variable overhead items reflect appropriate decreases.

<u>Unit Cost</u>	<u>P-65-1</u>	<u>P-65-2</u>
Mark V-B	\$1.19	\$1.35
Mark V-E	1.66	1.98

The unit costs are not considered unreasonable based on the low level of production.

Conclusion

Based on a declining level of production, the estimates are reasonable and we recommend acceptance of the proposal (P-65-2) as submitted.

Contract Finance Information

The revised estimates of cost and fixed fees are as follows. Actual costs are included for October and November.

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J. S. Hopkins

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JAN 20 1965

Activity	P-65-2			P-65-1	Change
	Cost	Fee	Total		
Mark V-E	\$ 922,024	\$58,133a/	\$ 980,157	\$ 912,479	\$ 67,678
Mark V-B Reg.	163,095	10,163	173,258	540,695	(367,437)
Mark V-B 12"	91,113	5,860	96,973	106,116	(9,143)
Thorium	26,808	345	27,153	6,105	21,048b/
Fab. Equipment	50,200	a/	50,200	49,600	600.
Purchased Equip.	9,800	-0-	9,800	40,400	(30,600)
Total	<u>\$1,263,040</u>	<u>\$74,501</u>	<u>\$1,337,541</u>	<u>\$1,655,395</u>	<u>\$(317,854)</u>

a/ Includes fee of \$2,757 on fabricated equipment.

b/ A fee was paid on the majority of the thorium work in the contract period ending 9/30/64. The work was delayed because of difficulties beyond the control of Sylcor; consequently, the costs have been incurred in this period for the carryover work. Cost subject to fee is \$5,760.

Obligations

The obligation under the contract is decreased \$(312,854) as follows:

Mark V-B Reg.	\$ (367,437)
Mark V-B 12"	(9,143)
Mark V-E	67,678
Thorium	21,048
Total Operations	<u>\$(287,854)</u>
Equipment	<u>\$ (25,000)</u>
Total	<u>\$(312,854)</u>

Recap of Costs, Fixed Fee and Obligations

	Mod. 39	Increase (Decrease)	Mod. 40
Operating Costs	\$30,510,242	\$(270,940)	\$30,239,302
Plant and Capital Equipment (Beginning July 1, 1963)	291,289	(30,000)	261,289a/
Fixed Fee (Operations)	1,728,996	(16,914)	1,712,082
Total Estimated Cost	<u>\$32,530,527</u>	<u>\$(317,854)</u>	<u>\$32,212,673a/</u>
Commission Obligation	\$32,515,527	\$(312,854)	\$32,202,673
Operation	-	(287,854)	-
Equipment	-	(25,000)	-

a/ Includes \$10,000 first quarter FY 1966 equipment requirements that are not being obligated.

USDOE 017804

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J. S. Hopkins

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JAN 20 1965

Contract Article Changes

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,500,591, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,712,082. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,263,040, exclusive of the Contractor's fixed fee of \$74,501."

2. In paragraph 2., Obligation of Funds of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$32,515,527" is deleted and the figure "\$32,202,673" is substituted therefor.

3. Subparagraph (f) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE is revised to read:

"(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$74,501."

4. Subparagraph (f) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS is revised to read:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$74,501 shall become due and payable in monthly installments as follows:

October-November 1964	\$6,956
December, 1964 - September, 1965	5,334

cc: J. J. Wise, Manager's Ofc., cy. 2A
R. A. Messick, B&F, cy. 3A
N. J. Donahue, T&P, cy. 4A

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HEALTH
AND SAFETY
LABORATORY



SYL00050597

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RESULTS OF STUDY	3
METHOD OF STUDY	3
PROCESS DESCRIPTION	3
DISCUSSION	4
CONCLUSION	4

Figure 1 - Daily Weighted Average Exposures (D/W/A/E)

Table I - Comparison of Daily Weighted Exposures

Table II - Comparison of Average Breathing Zone Samples

Table III - Comparison of Average General Air Samples

Appendix A

List of Personnel

Appendix B

Job Analysis Sheets

Appendix C

Sample Survey Sheets
(Copy 1 only)

COPE

A semi-annual air hygiene survey was conducted at the Hicksville Pilot Plant, Sylvania Electric Products, Inc. on May 2-4, 1955 by the Industrial Hygiene Branch, Health and Safety Laboratory. This survey covered exposures to airborne thorium during the preparation of aluminum-clad thorium slugs.

PURPOSE

1. To evaluate the average daily weighted exposure of restricted area personnel to alpha emitting dust.
2. To compare present personnel exposures with those obtained previously.
3. To compare average breathing zone and general air concentrations with those of the previous survey of specific operations and locations within the operating area.
4. To evaluate the effectiveness of existing controls and procedures.
5. To provide a basis for additional control recommendations where necessary.

RESULTS OF STUDY

NYOO Surveys

	5/55	10/54
Number of workers studied	26	26
Average weighted exposure (d/m/M ³)*	10.5	3.0
Maximum exposure (d/m/M ³)	22	6.2
Personnel exposed to 0-100 d/m/M ³	100%	100%

*d/m/M³ = disintegrations per minute per cubic meter of air.

100 d/m/M³ = maximum allowable concentration (MAC) tentatively used by HASL.

All of the 26 project employees were exposed to daily weighted concentrations 10% of the MAC or less.

METHOD OF STUDY

The method of conducting the dust study is the same as that reported in report No. HASL-Sylvania-9.

PROCESS DESCRIPTION

The thorium slug canning process is the same as reported for uranium slug canning (HASL-Sylvania-9, 10/54). However, mechanization of several process operations has been made since the last survey. These significant improvements are:

Instead of manual reaming, wire brushing and buffing each of the sleeve units, a mechanical sleeve brushing and buffing unit was developed by Mr. Johnson of Sylvania. The machine capable of satisfactorily cleaning six sleeve units at one time, performs the cleaning operation in the same time it normally took for cleaning one sleeve unit.

2. The Hannifin press has been modified so that die press charging operation can be performed from both sides of both presses.

DISCUSSION

A summary of daily weighted exposures is given in Table I and is shown graphically in Figure 1.

Table II and Table III contain summaries of average breathing zone and general air concentrations respectively.

A list of personnel is included in Appendix A.

The average weighted exposures computed on Job Analysis Sheets are included in Appendix B.

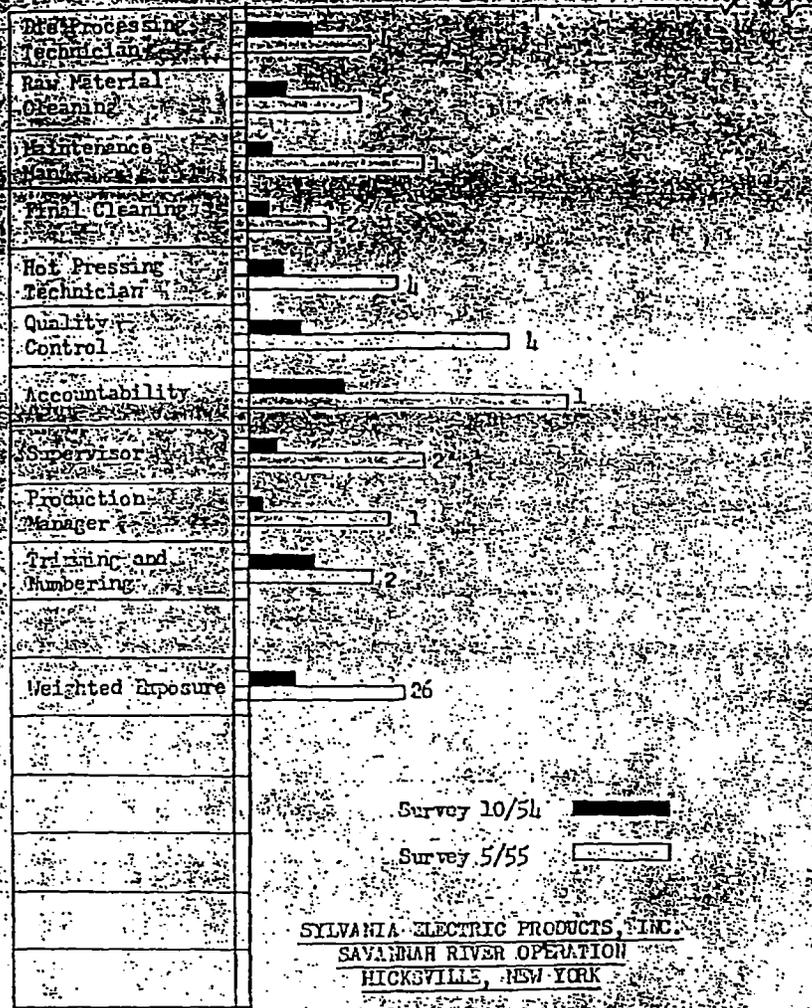
The results of the thorium dust survey indicate that none of the average breathing zone and average general air or daily weighted exposure to be above tolerance.

CONCLUSION

The gratifying results found in this survey can be attributed to the health and safe mindedness of the Sylvania managerial and operating personnel. Responsibility and concern on the part of supervisors in safeguarding personnel and minimizing the spread of radioactive materials are borne out by the minimal airborne dust exposures.

DELAY WEIGHTED CANTRAGS EXPOSURES (C/MAP)

Occupation 10 20 30 100



Survey 10/54 [Black Bar]
 Survey 5/55 [White Bar]

SYLVANIA ELECTRIC PRODUCTS, INC.
 SAVANNAH RIVER OPERATION
 HICKSVILLE, NEW YORK

Figure 1

TABLE I

COMPARISON OF DAILY WEIGHTED EXPOSURES

Occupation	No. of Employees	Exposure d/m/M ³	
		10/5h	5/55
Die Processing Technician	4	4.3	8.3
Raw Material Cleaning*	5	2.8	8.9
Maintenance Man	1	1.9	12
Final Cleaning	2	1.5	5.7
Hot Pressing Technician	4	2.5	10
Quality Control**	4	3.7	18
Accountability	1	6.2	22
Supervisor	2	1.9	12
Production Manager	1	1.0	9.6
Trimming and Numbering***	2	4.3	8.3
TOTAL NUMBER OF EMPLOYEES	26		
AVERAGE EXPOSURE		3.1	10.5

* Raw material cleaning formerly called acid cleaning.

** Quality control operations (5/55) is a combination of initial and final inspection operations. The 10/5h daily exposure shown for the quality control men is based on the average of the initial and final inspection exposures.

*** Trimming and numbering previously included in die processing operation.

TABLE II
COMPARISON OF AVERAGE BREATHING ZONE SAMPLES

OPERATION	No. of Samples	Average Concentration	
		10/5h	5/55
Extracting 6 canned slugs	3	5.6	12
Separating 6 slugs from 6 dies in press	3	-	10
Wire brushing 6 die sleeves in automatic brushing machine and placing sleeves on hot plate	3	8.5	8
Spraying MoS ₂ on inside of sleeves	3	7.5	18
Wire brushing 6 plugs and die punchers with MoS ₂	3	3.1	22
Spraying 6 plugs and die punchers with MoS ₂	3	2.4	9
Trimming ends of 3 canned slugs in trimming machine	3	5.1	31
Removing 6 sleeve assemblies from furnace	3	17	46
Inserting 6 sleeve assemblies into furnace	3	12.5	42
Removing 6 slugs, cans, plugs from etching cage and placing into drier	3	12	23
Removing 6 slugs, cans, from drier and spraying with MoS ₂	3	6.7	17
Loading 6 canned slugs into dies	3	-	33

TABLE III

COMPARISON OF AVERAGE GENERAL AIR SAMPLES

Location	Average Alpha Concentration (d/m ³)	
	<u>10/54</u>	<u>5/55</u>
Die Processing Area	1.9	3
Acid Cleaning Area	18	3
Final Cleaning Area	12	4
Hot Pressing Area	14	5
Final Inspection Area	9	19
Initial Inspection Area	6	38
Guard Desk	1	19
Trimming and Numbering Area	-	3
Vault Area	9.2	23
Desk near Vault Area	4.6	19
General Plant Area	2	11

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SCOPE

A semi-annual uranium dust and radiation survey was conducted by the Industrial Hygiene Branch, Health and Safety Laboratory, at the Hicksville Pilot Plant, Sylvania Electric Products, Inc., during the period October 5-6, 1954. This survey covered the dust and radiation control problems existing during the preparation of aluminum-clad enriched uranium slugs.

PURPOSE

1. To evaluate the average daily weighted exposure of project personnel to radioactive dust.
2. To provide data for the dust exposure history of project personnel.
3. To evaluate the effectiveness of dust control equipment in the plant.
4. To gather data concerning the general level of surface contamination throughout the operating area.
5. To provide a basis for recommending additional control procedures.

METHOD OF STUDY

The method of conducting the dust survey is the same as that reported in Sylvania-8. The radiation survey was conducted by taking alpha, beta and gamma readings on the surfaces of equipment and structures using a Juno Alpha Survey Meter and a Modified 2610A Beta-Gamma Survey Meter.

RESULTS OF STUDY

Number of personnel studied	26
Average exposure (d/m/H ³)*.	3.0
Maximum exposure (d/m/H ³)*.	6.2
Less than 70 d/m/H ³	100%

*d/m/H³ - disintegrations per minute per cubic meter of air.
 70 d/m/H³ - maximum allowable concentration (MAC) tentatively used by the Health and Safety Laboratory.

PROCESS DESCRIPTION

1. Slugs are received and stored in a vault.
2. Incoming slugs are inspected visually and accounted for.

RECORD
-Area 1
-Area 2
-Area 3
-Area 4
-Area 5
-Area 6
-Area 7
-Area 8
-Area 9
-Area 10
-Area 11
-Area 12
-Area 13
-Area 14
-Area 15
-Area 16
-Area 17
-Area 18
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-Area 83
-Area 84
-Area 85
-Area 86
-Area 87
-Area 88
-Area 89
-Area 90
-Area 91
-Area 92
-Area 93
-Area 94
-Area 95
-Area 96
-Area 97
-Area 98
-Area 99
-Area 100

3. Slugs, aluminum jackets and caps, are placed into a basket and subjected to a cleaning cycle consisting of:
 - (a) Dipping in Dakite-90 followed by water rinse.
 - (b) Acid dipping in successive tanks of HNO_3-HF and $HCl-HNO_3$, followed by neutralization with $NaHCO_3$.
4. Baskets are conveyed to a drying room where slugs, jackets and caps are oven dried.
5. The enriched uranium slugs are inserted into the aluminum jackets, capped, and sprayed on the outside with MoS_2 .
6. The sprayed capped slugs are then inserted into die assembly units and hot pressed.
7. After hot pressing, the entire die assembly is removed to the die processing area where the die ram, plug, and capped slug are separated in a jig.
8. After the separation operation, the capped slug is trimmed, numbered and surface cleaned in a four step operation consisting of nitric acid dipping, neutralization with $NaOH$, water rinsing, and electro-polishing.
9. The various die parts (ram, plug, etc.) are polished, coated with MoS_2 and assembled.
10. The numbered capped slugs are then sent to the final inspection table for a dimensional check and then to the reflectoscope cage for non-destructive testing.
11. Finished slugs are then conveyed back to the vault and stored in special shipping containers.

Breathing zone operations involved in these operations may be summarized as follows:

1. Extracting capped slugs.
2. Cleaning and buffing rams.
3. Cleaning and buffing bottom plug.
4. Spraying with MoS_2 .
5. Cleaning and brushing insides of sleeves.
6. Buffing outside of sleeves on buffer and placing on heater.

7. Spraying, buffing and assembling sleeves.
8. Cutting off ends of canned slugs with scissors and trimming machine.

DISCUSSION

A summary of daily weighted exposures is given in Table I and is shown graphically in Figure 1. Tables II and III contain summaries of average breathing zone and general air concentrations. The results of a radiation survey made in the operating area are shown in Figure 2. Results of smear samples taken during the radiation survey are listed in Table IV. The results of volometer checks on the various hoods used throughout the process area are listed in Table V. A list of personnel is included in Appendix A. The average weighted exposures are computed on Job Analysis Sheets which are included in Appendix B.

The results of the dust survey indicate not a single general air, breathing-zone nor daily weighted exposure to be above tolerance.

The results of the radiation survey and smear samples indicate an overall low level of surface contamination.

RECOMMENDATIONS AND CONCLUSION

There were two observations made during the initial acid cleaning operations that are noteworthy. They are:

1. During the operation consisting of removal of the cage containing 6 slugs, caps, and cans from 5% HF-95% HNO₃ solution and insertion of the cage into a water rinse tank, intense nitric acid fumes were released. There was no exhaust ventilation at this operation. Other cleaning and rinsing operations were ventilated.

Recommendation #24. Provide exhaust ventilation at the water rinse tank following the 5% HF-95% HNO₃ acid cleaning operation.

2. The acid cleaning operators wear protective eye goggles during all cleaning operations, however, inasmuch as there is the ever present spray hazard arising from slippage of the cage into acid tanks, it is our opinion that full face protection is necessary.

Recommendation #25. The acid cleaning operators should wear full protective face shields during all acid cleaning operations.

The results of the airborne dust and direct radiation survey indicate no personnel having average exposures exceeding the maximum permissible level. Full credit for this excellent record should be given to Sylvania managerial personnel for their prior constructive planning of the S.R.O. Operation.

TABLE II

TABULATION OF AVERAGE BREATHING ZONE SAMPLES

<u>No.</u>	<u>Operation</u>	<u>No. of Samples</u>	<u>Aver. Time Per Operation Minutes</u>	<u>Average Conc. d/m³</u>
1	Extracting 6 canned slugs	3	4.7	5.6
2	Cleaning and buffing 6 rams	3	2.75	7.1
3	Cleaning and buffing bottom plug	3	3.4	< 1
4	Spraying 6 rams and 6 plugs with MoS ₂	3	2.4	3.3
5	Cleaning and brushing insides of 6 sleeves	3	14.3	16
6	Buffing outside of 6 sleeves on buffer and placing on heater	3	2.75	4.7
7	Spraying, buffing and assembling sleeves	3	7.5	5.5
8	Cutting off ends of canned slugs with scissors and trimming machine	3	4.25	5.1

TABLE III

TABULATION OF AVERAGE GENERAL AIR SAMPLES

<u>Location</u>	<u>No. of Samples</u>	<u>Concentration d/m³</u>
Die Processing Area	14	1.9
Acid Cleaning Area	18	1.5
Final Cleaning Area	12	1.6
Hot Pressing Area	14	1.6
Final Inspection Area	9	1.2
Initial Inspection Area	6	4.6
Vault Area	6	9.2
Guard Desk	2	<1
Dry Box Area	3	<1
Hydride Furnace Area	1	1.2

TABLE IV

SMEAR RESULTS

	<u>Location of Sample</u>	<u>Results</u>
	Door entrance- floor	neg.
	Final inspection table	neg.
	Final inspection floor area	1.5
	Reflectoscope cage- floor	7.6
	Rear of #1 press	1.2
	Southwest of #2 press	1.6
	Front of #2 press	14
	Can inspection table- floor	12
	Can inspection table	1.2
	Center of vault- floor	2.3
	Entrance to vault- floor	3.4
	Drying room- floor	7.4
	Cleaning room- floor	2.5
	Flug spraying area- floor	-
	Disassembly die table	3.3
	Sleeve cleaning table	2.3
	Sleeve cleaning floor	11.9
	Sleeve spraying table	1.9
	End cutting- floor	1.3
	Electroplating bench	neg.
	Center of floor area	15
	Floor near sinks	5
	Near furnace car #4	1.9

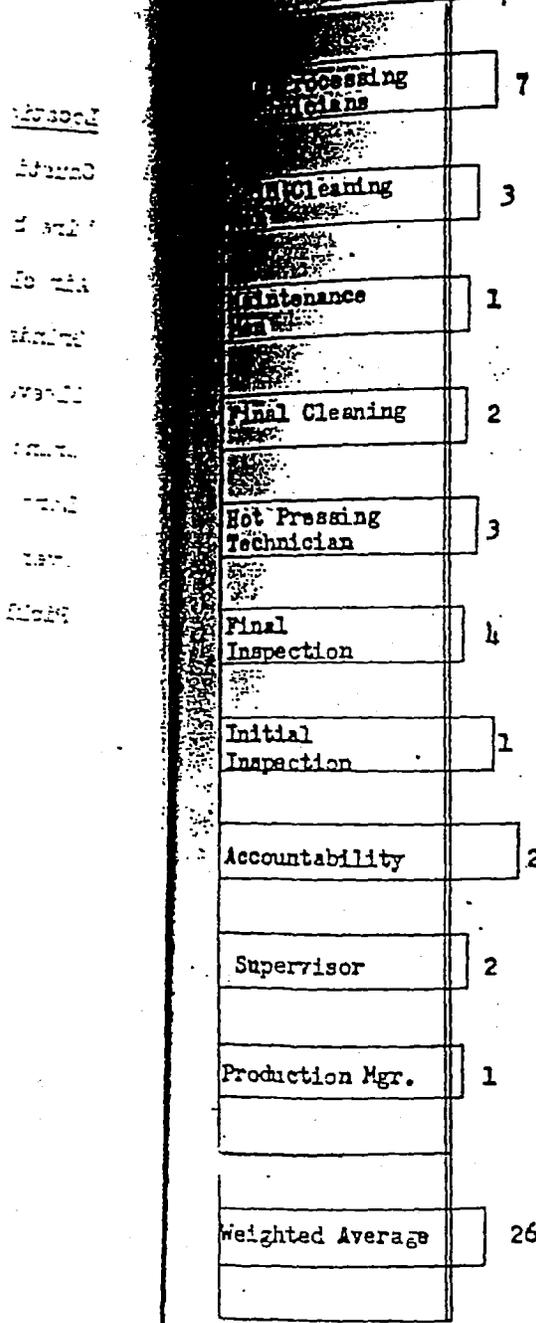
TABLE V

HOOD VELOCITY READINGS

Location of Hood	Air Velocity	
	No Fan	L.F.M. With Fan
Caustic Tank- lateral type exhaust	250	0 - 200
Wire brush cleaning	250	no effect
Air cleaning hood	250	no effect
Grinder- wire brush	300 (left)	200 (right)
Sleeve spraying hood	200	
Grinder buffer	0	200
Large tank - canopy hood	200	
Over room hood	150	
Pickling room- acid & caustic tanks	30	

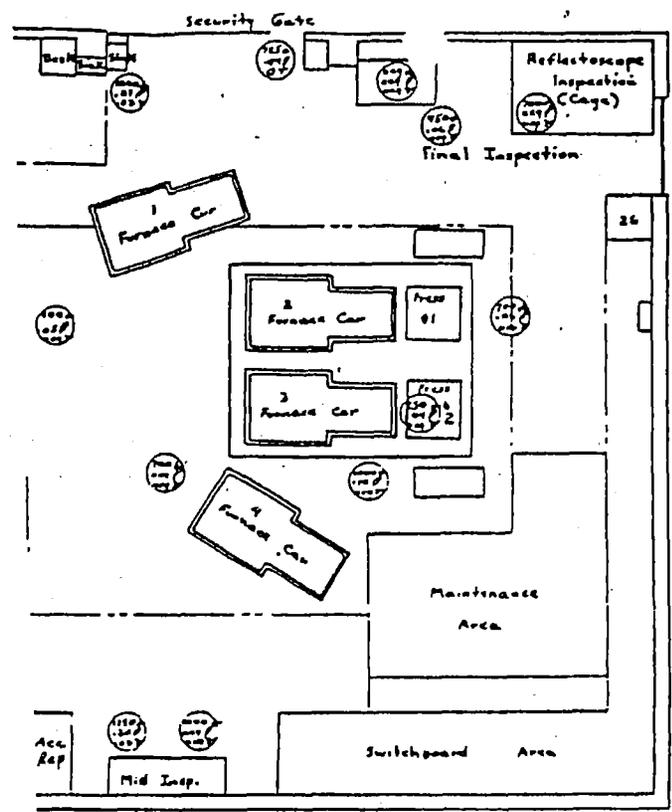
EXPOSURE μm^3

10 20 30 40 50 60 70 80



SYLVANIA ELECTRIC PRODUCTS, INC.
SAVANNAH RIVER OPERATION
Hicksville, New York

Figure 1



1. Final Cleaning Tanks
2. Final Cleaning Tanks
3. Final Cleaning Tanks
4. Final Cleaning Tanks
5. Final Cleaning Tanks
6. Final Cleaning Tanks
7. Final Cleaning Tanks
8. Final Cleaning Tanks
9. Final Cleaning Tanks
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16. Final Cleaning Tanks
17. Final Cleaning Tanks
18. Final Cleaning Tanks
19. Final Cleaning Tanks
20. Final Cleaning Tanks
21. Final Cleaning Tanks
22. Final Cleaning Tanks
23. Final Cleaning Tanks
24. Final Cleaning Tanks
25. Final Cleaning Tanks
26. Final Cleaning Tanks

Fig. 2

UNITED STATES ATOMIC ENERGY COMMISSION
 NEW YORK OPERATIONS
 70 COLUMBUS AVE., NEW YORK 23, N. Y.
 Radiation Survey Results
 Savannah River Operation
 Savannah River Plant
 Savannah River Products Test

SCALE	SWUNG	—B—
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Units of Measure:
 1 ft = 12 in
 2.8 = 100/36
 1 1/2 = 18/12

TABLE OF PERSONNEL

Die Processing

Shomber
Matsko
Mullery
Regenie
Smulcheski
Brownsworth
Conham

Acid Cleaning

Mandero
Franghiadi
Jacobs

Maintenance Man

Terringer

Final Cleaning

Lofreddo
Caloumenou

Hot Pressing

Popowicz
Valenti
Demora

Final Inspection

Risch
Darwin
Goldberg
Stinebring

Initial Inspection

Ulrich

Accountability

Borris
Svigals

Supervisor

DeVincentis

Production Manager

Higgins

JOB ANALYSIS SHEET

4- day shift
3 night shift

OR: Dio Processing Technicians

MEN/SHIFT: 2 SHIFTS/DAY: 7 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP-LES	CONCENTRATION $\frac{d}{m^3}$ / $\frac{m^3}{m^3}$			AVG CONCENTRATION TOTAL TIME (T X C)
					LOW	HIGH	A.V.G.	
BZ- Extracting 6 canned slugs	4.7	4.5	21.2	3	41	11.7	5.6	119
BZ- Cleaning and buffing 6 cans	2.75	4.5	12.4	3	41	11.7	7.1	88
BZ- Cleaning and buffing cotton plug	3.4	4.5	15.3	3	41	41	41	-
BZ- Spraying 6 cans and 6 slugs with soap	4.4	4.5	19.8	3	41	4.7	3.3	34
BZ- Cleaning and brushing inside of 6 sleeves	2.3	4.5	11.5	3	41	4.7	15	1036
BZ- Buffing outside of 6 sleeves on buffer and placing in machine	2.75	4.5	13.4	3	41	2.1	4.7	51
BZ- Spraying, buffing, and assembling sleeves	7.5	4.5	35.3	3	41	2.1	4.7	116
BZ- Cutting off ends of canned slugs with scissors & trimming machine	4.25	4.5	19.2	3	4.0	4.0	3.0	37
MA- Dio processing area	-	-	200.5	1	41	3.3	3.7	235
MA- Man's room	-	-	10	1	5	3	3.5	45
MA- Lunch room	-	-	30	1	41	41	41	-

*Survey of January, 1954

Refer to two significant figures

- 510

- 2170

$\frac{T \times C}{Z (T)}$

4.3

$\frac{d}{m^3}$ / $\frac{m^3}{m^3}$

0.06

TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

2 men day shift
1 man night shift

OR: Acid Cleaning Man

MEN/SHIFT: 2 SHIFTS/DAY: 3 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMPLES	CONCENTRATION $\mu\text{m}/\text{m}^3$			AIR CONDI. TIMES TOTAL TIME (T x C)
					LOW	HIGH	AVG.	
BI- Removing sling from oven, weighing, inserting plug and spraying $\text{Na}_2\text{S}_2\text{O}_8$	6.75	10.6	71.6	3	<1	12	6.7	480
BI- Removing slugs and cans from etching cage	2.3	10.6	29.7	3	<1	29	12	356
QA- Acid cleaning area			348.7	18	<1	4.4	1.5	524
QA- Men's room			10	2*	5	8	6.5	65
QA- Lunch room			50	4**	<1	<1	1	-

**Survey of January, 1954

rounded to two significant figures

510

1430

$\frac{C \times T}{2}$

2.8

$\frac{d}{m}$

0.04

TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OR: Maintenance Men 1 MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP- LES	CONCENTRATION d/m^3			AVG CONCENTR. TOTAL TIME (% C)
					LOW	HIGH	AVG.	
1- Plant			150	95	<1	33	2	900
2- Men's Room			10	2**	5	8	65	65
3- Lunch room			50	1**	<1	<1	<1	-
**Survey of January, 1954.								

Noted on the significant figures

510

965

() = 1.9

d/m^3 = 0.03

TIMES THE MAXIMUM
ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Final Cleaning 1 MEN/SHIFT 2 SHIFTS/DAY 2 MEN/DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (-)	NO OF SAMP. LES	CONCENTRATION d/m^3			AVG. NO. OF TIMES TOTAL TIME AT (C)
					LOW	HIGH	(C) AVG.	
GA- Final cleaning area			150	12	<1	4.4	1.6	720
GA- Men's Room			10	2	5	8	6.5	65
GA- Lunch			50	4**	<1	<1	<1	-

**Survey of January, 1954

Adjusted to two significant figures Σ = 510 Σ (T x C) = 785

$\frac{\Sigma (T \times C)}{\Sigma (T)}$ = 1.5 d/m^3 = 0.02 TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

2- day shift
1- night shift

OPERATOR: Hot Pressing Technicians

MEN/SHIFT: 2 SHIFTS/DAY: 3 MON. DAY

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (%)	NO. OF SAMP. LES	CONCENTRATION d/n /m ³			AVG CON C. TIMES TOTAL TIME T/C
					LOW	HIGH	AVG.	
E1- Removing 6 slabs assays from furnace	1.25	10.6	13.3	3	<1	39	17	226
E2- Inserting 6 slabs assays into furnace	2.50	10.6	26.5	3	7.6	22	12.5	331
QA- Hot pressing area			410	14	<1	6.5	1.6	655
QA- Men's room			10	200	5	8	6.5	65
QA- Lunch room			50	400	<1	<1	<1	-

**Survey of January, 1954

Related to two significant figures

Σ = 510

Σ T/C = 1275

Σ C/C = 2.5
Σ (%)

d/n = 0.01

TIMES THE MAXIMUM
ALLOWABLE CONCEN-
TRATION.

JOB ANALYSIS SHEET

OPERATOR: Final Inspection MEN/SHIFT: 1 SHIFTS/DAY: 1 MEN/DAY: 1

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION d/m^3			AVG CON'N. TIMES TOTAL TIME (T X C)
					LOW	HIGH	(C) AVG.	
QA- Final inspection area			450	9	<1	19	4.6	2070
QA- Men's room			10	200	5	8	6.5	65
QA- Lunch room			50	100	<1	<1	<1	-

** Survey of January, 1954

Adjusted to two significant figures

T = 520

C = 2135

$(T \times C) / Z (T) = \underline{\quad 4.2 \quad}$

$d/m^3 = \underline{\quad 0.06 \quad}$

TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Initial Inspection MEN/SHIFT: 1 SHIFTS/DAYS: 1 MEN/DAY: 1

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN.)	OPERA. PER SHIFT	TIME PER SHIFT (MIN.) (-)	NO. OF SAMP. LES	CONCENTRATION /M ³			AVE. CONCENT. TIMES TOTAL TIME (MIN.)
					LOW	HIGH	AVG.	
QA- Initial Inspection area			450	6	<1	19	4.6	2070
QA- Men's room			10	2	5	8	6.5	65
QA- Lunch room			50	4	<1	<1	<1	-

*Survey of January, 1954

Related to the significant figures

510

235

$(T \times C) \div (T) = 4.2$

$d/m^3 = 0.06$

TIMES THE MAXIMUM ALLOWABLE CONCENTRATION

JOB ANALYSIS SHEET

OPERATOR: Accountability 2 MEN/SHIFT: 1 SHIFTS/DAY: 2 MEN/DAY: 2

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (M:IN) (T)	NO. OF SAMP. LES	CONCENTRATION $\mu\text{g}/\text{M}^3$			AVE. CON. TIMES TOTAL TIME (T x C)
					LOW	HIGH	AVG.	
QA- Vault area			225	6	1.4	33	9.2	2070
QA- Desk area near vault			225	6	<1	19	4.6	1035
QA- Men's room			10	2**	5	8	6.5	65
QA- Lunch room			50	4**	<1	<1	<1	-

**Survey January, 1954

*Rounded to two significant figures $\Sigma T = 510$ $\Sigma T \times C = 3170$
 $\frac{\Sigma T \times C}{\Sigma T} = \underline{6.2}$ $\frac{\Sigma T \times C}{\Sigma T} = \underline{0.09}$ TIMES THE MAX. M.M. ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Supervisor MEN/SHIFT: 2 SHIFTS/DAY: 2 WEEK/DAY: 1

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO OF SAMP-LES	CONCENTRATION $\mu\text{g}/\text{m}^3$			AVE CONCN. TIMES TOTAL TIME (T x C)
					LOW	HIGH	AVE.	
QA- Plant			150	95	<1	33	2	900
QA- Man's room			10	2**	5	8	6.5	65
QA- Lunch room			50	1**	<1	<1	<1	-
*SALVAGE of January, 1954								

Adjusted to two significant figures

$\Sigma T = 510$

$\Sigma T \times C = 965$

$\frac{\Sigma T \times C}{\Sigma T} = \underline{1.9}$

$\frac{\Sigma T \times C}{\Sigma T} = \underline{0.03}$

TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

JOB ANALYSIS SHEET

OPERATOR: Production Manager MEN/SHIFT: 2 SHIFTS/DAY: 2 MEN/DAY: 4

OPERATION OR OPERATING AREA	TIME PER OPERA. (MIN)	OPERA. PER SHIFT	TIME PER SHIFT (MIN) (T)	NO. OF SAMP. LES	CONCENTRATION /M ³			AVG. CON. OF TIME. TOTAL TIME (T X C)
					LOW	HIGH	AVG.	
QA- Plant			225	95	<1	33	2	450
QA- Office			225	4	<1	<1	<1	-- --
QA- Men's room			10	2	5	8	6.5	65
QA- Lunch room			50	4	<1	<1	<1	--
**Survey of January, 1954								

Adjusted to two significant figures

$\bar{C} = 510$

$\bar{C} \times C = 525$

$(T \times C) = 1.0$

$d/n \cdot M^2 = 0.01$

TIMES THE MAXIMUM ALLOWABLE CONCENTRATION.

PLANT: SYLVANIA
 ADDRESS: Hicksville
 MAILING ADDRESS:

HEALTH AND SAFETY DIVISION
 P. O. BOX 1300
 NEW YORK, N.Y.

SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	ANALYZE FOR		SAMPLING		TOTAL COUNT	COUNTS PER MINUTE	METHOD OF DETERMINATION	RESULTS
				RATE	TIME	RATE	TOTAL				
730	10/5	7:09	4' Behind HAMM, FIN. COMPRESSOR SV	.02	30	.6	13	0.1	Direct	0.16	
731			TOP OF FCE CAR		30	.6	5				
732			5' South W. F. - PRESS		30	.6	16	0.2		0.16	
733			FIN. INSPECTION MEN		30	.6	14	0.2		0.16	
734			FIN. A. CON. BENCH		30	.6	11	0.1		0.16	
735			REFLECTION COUPLER		30	.6	3				
736			WATER COOLER		30	.6	18	0.2		0.16	
737			NEAR SECURITY GATE		30	.6	7				
738			INITIAL IMP. STATION		30	.6	18	0.2		0.16	
739			INIT. IMP. TABLE		30	.6	11	0.2		0.16	
740			COUPLING OVER. ROOM		30	.6	4				
741			2' South W. F. - PRESS		30	.6	7				
742			NEAR RESTRICTED AREA		30	.6	29	0.2		0.16	
743			NEAR W. F. - PRESS		30	.6	14	0.2		0.16	
744			NEAR W. F. - PRESS		30	.6	14	0.2		0.16	

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

PLANT: 34 DUNA VIA HICKSVILLE

MAILING ADDRESS:

ROUTE, RESULTS TO: KLEVIN

ANALYZE FOR: Ua

METHOD OF DETERMINATION: *Scint Counter*

SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
744	10/6	10:30	LA CENTER SP AREA	0.02	30	0.6	0.30	8	30		
745			VAULT - EAST				0.2	12	30	0.4	1.4
746			VAULT - WEST		5		0.3	21	30	0.7	2.5
747			DOWN ROOM + SPRAY USE END				0.2	19	30	0.6	2.5
748			OVER ACID RINSE TANK - ELECTRO				0.3	3	30		
749			OVER LINE CUT MACHINE + SW END				0.2	13	30	0.4	1.4
750			SW CORNER - BENCH - AOT MO SPRAY HUB + CAM SW DIS				0.3	20	30	0.7	2.5
751		11:20	ACID ROOM				0.2	14	30	0.5	1.9
752			Control ROOM M.O. SPRAY				0.3	10	30		
753			EVAP TANKS	0.02	30		0.2	16	30	0.5	2.0
754			DISASSEMBLY - ROLLER PLANT				0.3	6	30		
755			RAM + PLUG EJECT.				0.2	10	30	0.3	0.3
756			WIRE BRUSH - LINE CLEAN				0.3	21	30	0.7	2.6
757			WIRE UNDER HOIST				0.2	17	30	0.6	2.1

ANALYZED BY: KRG

ANALYZED BY: J. O'Connell

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

SV1L00075502

PLANT	MAILING ADDRESS	ANALYZE FOR	SAMPLING			TOTAL COUNT	COUNTS PER MINUTE	RESULTS
			RATE	TIME	TOTAL			
SYLVANIA	BE'S KICKS UNICE	KCEVIN						
I-768	BE REMOVING SLUG FROM METAL W/ C-TOILET PLUG - SAPPY		0.2	6 1/4	1125	0.18	8	
I-768	Same as I-758			6 1/2	113	0.2	17	
I-768	BT: Removing slugs + eggs from plastic cage (cleaning to room)			3	106	0.3	4	
I-768	Same as I-758-I-759			7 1/2	115	0.2	16	
I-768	Same as I-760			2 3/4	1055	0.3	16	
I-768	Same as I-760 & I-762			2 3/4	1055	0.2	8	
I-768	Extracting & rinsing slugs			5 3/4	115	0.3	8	
I-768	Cleaning & buffering 6 arms			3 1/2	107	0.3	14	
I-768	6 arm pliers			3	106	0.2	7	
I-768	6 arms 1.6 pellets			3 1/2	107	0.3	8	
I-768	Same as I-764			4 1/2	109	0.3	10	
I-768	Same as I-764			3 1/2	107	0.3	8	
I-768	Same as I-766			3 1/2	107	0.3	7	
I-768	Same as I-765			2 3/4	1055	0.2	4	

TYPE OF SAMPLE: AREA

METHOD OF DETERMINATION: Direct Count

PLANT: BE'S

MAILING ADDRESS: KICKS UNICE

ANALYZE FOR: KCEVIN

DATE: 11/17

TIME: 11:15

LOCATION: 319

COLLECTED BY: MM

RESULTS: 11/17

PLANT: *W. A. Lewis*
 MAILING ADDRESS: *FINDLAYVILLE*
 ROUTE RESULTS TO: *1*

ANALYZE FOR

SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	RATE	SAMPLING		TOTAL COUNT	COUNTS REMAINING	RESULTS
					TIME	TOTAL			
772	11:51		OVER. R. HF TANK	102	72	1.44	16	0.22	0.57
773	11:58		OVEN ROOM - 40. SAMPY		72	1.44	9	0.11	0.27
774	12:04		GUARD P. DISK		60	1.2	16	0.18	0.47
775	12:06		DRY BOX - RELAT. PH.		58	1.16	9	0.11	0.28
776	12:10		opp side of drive		54	1.08	18	0.13	0.41
777	12:12		FRONT of AIR locks		48	0.96	9	0.11	0.41
778	12:15		NORTH HYDRIDE FEET		47	0.94	16	0.13	0.42
777	11:15		Sams on 730		30	0.6	7	0.1	0.27
780			" " 731			0.6	20	0.14	0.47
781			" " 732			0.6	10	0.11	0.33
782			" " 733			0.6	7	0.1	0.27
783			" " 734			0.6	7	0.1	0.27
784			" " 735			0.6	2.4	0.15	0.37
785			" " 736			0.6	2.5	0.13	0.33

COLLECTED BY: *KAG*

PLANT: *W. A. Lewis*
 MAILING ADDRESS: *FINDLAYVILLE*
 ROUTE RESULTS TO: *1*

METHOD OF DETERMINATION

TOTAL COUNT	COUNTS REMAINING	RESULTS
16	0.22	0.57
9	0.11	0.27
16	0.18	0.47
9	0.11	0.28
18	0.13	0.41
9	0.11	0.41
16	0.13	0.42
7	0.1	0.27
20	0.14	0.47
10	0.11	0.33
7	0.1	0.27
7	0.1	0.27
2.4	0.15	0.37
2.5	0.13	0.33

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

HEALTH AND SAFETY DIVISION
 LABORATORY
 NETWORKS

PLANT: *Sherwin Williams*
 MAILING ADDRESS: *15th St. NW*

TYPE OF SAMPLE: *Paint*
 METHOD OF DETERMINATION: *GC/MS*

ROUTE RESULTS TO: *Klein*

ANALYZE FOR: *OC*

SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	RATE	SAMPLING		SAMPLE TAKEN	TOTAL COUNTY TIME	COUNTS PER MIN.	RESULTS
					TIME	TOTAL				
7786	1/15	2:00	Same as 737	0.2	30	0.6	0.2%	30	0.2	1.3
7787			" " 738				0.2%	30	0.2	1.3
7788			" " 740				0.2%	30	0.2	1.3
7789			" " 741				0.2%	30	0.2	1.3
7790			" " 742				0.2%	30	0.2	1.3
7791			" " 743				0.2%	30	0.2	1.3
7792		2:40	" " 744		1.1		0.3%	30	0.2	3.4
7793			" " 745				0.2%	30	0.2	3.4
7794			" " 746				0.2%	30	0.2	3.4
7795			" " 747				0.2%	30	0.2	3.4
7796			" " 748				0.2%	30	0.2	3.4
7797			" " 749				0.2%	30	0.2	3.4
7798		3:00	" " 750				0.2%	30	0.2	3.4
7799			" " 751				0.2%	30	0.2	3.4

COLLECTED BY: *(Signature)*

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

STATE OF NEW YORK
 DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DATE REPORTED: 10/1/85
 P.O. BOX 550, ARDENNYAS, NEW YORK 12150

QUANT: 100
 MAILING ADDRESS: Hicks & Mc
 ROUTE RESULTS TO: K. G. G.

TYPE OF SAMPLE: AIR
 METHOD OF DETERMINATION: Lowel Counter

SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	ANALYZE FOR		SAMPLING		TOTAL COUNT	COUNT PER MIN.	RESULTS	
				PM10	PM2.5	RATE	TIME				
800	10/6	3:20	Same as 753	PM10	PM2.5	20	30	9	0.3	11/1/85	
801			" " 756			104		11	0.2		
802			" " 755					15	0.2		
803			" " 757					11	0.1		
804			" " 739					16	0.3		
805		4:00	" " 754					14	0.2		
806			" " 772					12	0.2		
807			" " 793					13	0.1		
808	10/6	0845	AH Guard Deck 777				30	13	0.3	11/1/85	
809		0855	Same as 730					11	0.2		
810		0855	Same as 732					10	0.2		
811		0855	Same as 733					13	0.1		
812		10:30	" " 734				40	11	0.2	11/1/85	
813		0855	" " 735				30	11	0.2	11/1/85	
COLLECTED BY: K. G. G.											

SURVEYOR TO RETAIN; LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

HEALTH AND SAFETY DIVISION
 P. O. BOX 30, ALBANY, N.Y.
 NEW YORK 23, N.Y.

DATE OF DETERMINATION
 7/6/57
 LABORATORY

PLANT *Sylvania*
 MAILING ADDRESS *Asheville*
 ROUTE RESULTS TO *Clifton*

B2'S

TYPE OF SAMPLE *AIR - DUST*
 METHOD OF DETERMINATION *Scint Counter*

ANALYZE FOR *U-235*

SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
I 814	11/5		Same as 766	.07	58/6	.076	0.2	5	30		
I 815			Spraying of clean and bottom plate		1 1/4	.035	0.1	7	30		
I 816			Same as 765		2	.04	0.3	12	30	0.1	9.5
I 817			Same as 76.7		2	.04	0.2	10	30	0.1	9.7
I 818			Hot Press man remove 6 sleeves assy from furnace		1	.02	0.2	11	30	0.2	39
I 819			Hot Press man inserting 6 sleeve assy into furnace		2 3/4	.055	0.1	12	30	0.3	8.9
I 820			Same as I 818		1 1/4	.025	0.3	8	30		
I 821			Cleaning & brushing inside of 6 sleeves		1 1/2	.25	0.2	14	30	0.2	4.1
I 822			Buffing outside of 6 sleeves on buffer & placing on heater		2 1/2	.05	0.2	8	30		
I 823			Spraying, buffing & assemble sleeves		7/4	.145	0.1	9	30	0.5	14
I 824			cutting off ends of cleaned sleeves with pair of trimmer machine		6 1/2	.13	0.3	13	30	0.1	2.9
I 825			Same as I 824		3 1/4	.065	0.2	10	30	0.1	10
I 826			Same as I 824		3	.04	0.2	10	30	0.1	10.5
I 827			Same as I 821		1 3/2	.27	0.1	7	30		

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SURVEYOR TO RETAIN LAST COPY—RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

SYL00075507

NEW YORK 23, N.Y.

PLANT: *Sylvania Electric*
 MAILING ADDRESS: *Hicksville, L.I.*
 ROUTE RESULTS TO: *K. Levin*

ANALYZE FOR: *U_r*

TYPE OF SAMPLE: *Air*
 METHOD OF DETERMINATION: *Direct Count*

SAMPLE No.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL				
7828	10/6		<i>Exhaust of vacuum pump - pattern</i>			0.6	0.3	12	30	
7829		0948	Same as 736		30		0.2	15	30	1.3
7830		0940	Same as 737		1		0.2	64	20	3.0
7831		0940	" " 738				0.1	16	30	0.5
7832		0940	" " 740				0.3	15	30	0.5
7833		0940	" " 741				0.2	11	30	0.4
7834		0940	" " 743	1	30		0.1	15	30	0.5
7835		1025	" " 739		30		0.3	18	30	0.6
7836		1025	" " 744				0.2	13	30	0.4
7837		1025	" " 745				0.2	64	13	4.9
7838		1025	" " 746				0.3	64	29	2.2
7839		1025	" " 747				0.2	14	30	0.5
7840		1033	" " 748				0.2	12	30	0.4
7841			<i>Control</i>				0.1	64	30	2.1

COLLECTED BY: *K. W.*

ANALYZED BY: *J. C.*

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

SYL00075508

WILLIAMS OF DELAWARE

NEW YORK, N.Y.

PLANT <i>Sylvania</i>			MAILING ADDRESS <i>Aickville</i>				CITY AND STATE <i>Wm. West</i>				METHOD OF DETERMINATION <i>Liberal Count</i>	
ROUTE RESULTS TO <i>Kevin</i>			ANALYZE FOR				BKGD				RESULTS <i>1/17/3</i>	
SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.		
				Rate	TIME	TOTAL						
<i>I 872</i>			<i>Same as I 821</i>	<i>0.0</i>	<i>17</i>	<i>.34</i>	<i>11.2</i>	<i>10</i>	<i>30</i>	<i>0.1</i>		
<i>I 871</i>			<i>Same as I 822</i>		<i>23/4</i>	<i>.055</i>	<i>0.1</i>	<i>8</i>	<i>30</i>	<i>0.2</i>		
<i>I 872</i>			<i>Same as I 823</i>		<i>7/4</i>	<i>.155</i>	<i>0.3</i>	<i>13</i>	<i>30</i>	<i>0.1</i>		
<i>I 873</i>			<i>Same as I 822</i>		<i>3</i>	<i>.06</i>	<i>1.2</i>	<i>2</i>	<i>30</i>			
<i>I 874</i>	<i>13/4</i>		<i>Same as I 823</i>		<i>7 1/2</i>	<i>.15</i>	<i>0.2</i>	<i>2</i>	<i>30</i>			
<i>I 875</i>			<i>Control</i>	<i>-</i>	<i>-</i>		<i>0.1</i>	<i>3</i>	<i>30</i>			
<i>I 876</i>			<i>Same as I 819</i>		<i>2 1/4</i>	<i>.045</i>	<i>0.3</i>	<i>7</i>	<i>30</i>	<i>0.1</i>		
<i>I 877</i>			<i>Same as I 828</i>	<i>-</i>			<i>0.2</i>	<i>6</i>	<i>30</i>			
<i>I 878</i>			<i>Same as I 818</i>		<i>1 1/2</i>	<i>.103</i>	<i>0.2</i>	<i>9</i>	<i>30</i>	<i>0.1</i>		
<i>I 879</i>			<i>Same as I 828</i>		<i>-</i>		<i>0.1</i>	<i>9</i>	<i>30</i>	<i>0.2</i>		
<i>I 880</i>			<i>Same as 819</i>		<i>2 1/2</i>	<i>.105</i>	<i>0.3</i>	<i>12</i>	<i>30</i>	<i>0.1</i>		

W. West

FOR YOUR TO RETAIN LAST COPY RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

SVL00075510

EMPLOYEE NUMBER
 001

WORK CENTER
 100

PLANT
 Sullivan Electric

Smiles

METHOD OF DETERMINATION
 Direct Count

MAILING ADDRESS

Herkimer, L.I.

ROUTE RESULTS TO
 K/over

ANALYZE FOR
 Ud

Bked

SAMPLE NO.	DATE	HOUR	SAMPLE DESCRIPTION	SAMPLING			SAMPLE TAKEN	TOTAL COUNT	COUNT TIME	COUNTS PER MIN.	RESULTS
				RATE	TIME	TOTAL					
T-896	10/6		Diassy Dic Table	-	-	-	0.3	33	30	0.8	13.3
T-899			Steen Cleaning Table				0.2	23	30	0.6	2.9
T-900			Steen Cleaning Floor				0.2	64	21	2.9	11.1
T-901			Steen Spraying Table				0.1	18	30	0.5	1.9
T-902			End Cutting Floor				0.3	31	20	1.3	5.0
T-903			El. at sparkling bench				0.2	8	20	0.2	1.0
T-904			Center of floor area				0.2	53	20	2.3	11.0
T-905			Floor near sinks				0.1	28	20	1.3	5.0
T-906			Near furnaces #4				0.3	46	30	1.2	4.9

COLLECTED BY
 W.K.

ANALYZED BY
 J. Brown

SURVEYOR TO RETAIN LAST COPY - RETURN ALL OTHERS TO HEALTH AND SAFETY DIVISION

SYL00075512

E-25-58

Dr. Morris Kleinfeld, Director
Division of Industrial Hygiene
Att: Dr. Robert Katz
Mr. Jack Baliff, Chief, Engineering Section

Div. of Ind. Hyg.
New York City

June 11, 1959

Sylvania Corning Nuclear Corp.
Cantiagus Road
Hicksville, New York

Date visited: February 27, 1959
April 21, 1959
Visited by: Mr. Irving Kingsley, Ind. Hyg. Engineer
Mr. W. Harris, Chief, Industrial Hygiene
and Radiation Section, U.S.A.E.C., N.Y.
Operations office.
Persons interviewed: Mr. Henry Grieb, Radiation Safety Supv.
Mr. R. Andree, " " office
Purpose of visit: Survey plant for compliance with rules
of Code Bulletin No. 38
Origin: Request from Medical Section

In accordance with a request from the Medical Section, the above plant was visited to determine whether it was in compliance with the rules of Code Bulletin No. 38. The long time period between the time of request and visit was due to difficulties in obtaining security clearance and coordinating the activities of the various personnel involved to arrange a mutually satisfactory time of visit as well as to illness, vacation schedules and shutdown of the plant for several months. The actual plant survey was made during the first visit. The second visit was made for the purpose of examining the company's air sampling and film badge records.

REPORT

There are two separate reactor fuel element manufacturing facilities at this location. The commercial plant makes many different kinds of fuel elements for different reactors. Natural, enriched, and depleted uranium are handled. About 250 people are employed on these operations on a three-shift, 7-day basis.

A separate building is used to prepare fuel for an Atomic Energy Commission plant using raw natural uranium. These operations have been reduced to some extent recently and there are about 130 people employed here on a 1-shift, 5-day per week basis.

Description of Operations

Commercial Plant

The sequence of operations is as follows: The uranium-aluminum

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materials to be alloyed are weighed out in the accountability area and toted to the furnace room where they are melted at 960°E in a vacuum furnace exhausted by lateral hoods at top and bottom. The molds are poured in place beneath the furnace and the ingots removed from the molds in a ventilated hood located adjacent to the furnace. The ingots are heated, rolled in a mill exhausted by a canopy hood and sheared. Flugs are then punched out of the sheared pieces. These cores are placed in spaces which have been provided in aluminum plates called picture frames. There are two cores per plate. The plates are then hot-rolled to reduce their width by 50% and increase their length by 200%. They are sheared in half, faced on both sides with aluminum plate, tack welded on the sides and hot-rolled to a predetermined thickness. Then fluoroscopy is performed to determine the core length and its position. After another cold rolling operation, the plates are fluoroscoped again so that they can be centerpunched for the last shearing process. Finally, the plates are assembled into the elements and are inspected.

All these operations are performed in several rooms in either buildings #2 or #9. About 4 to 5 melts are prepared every 2h hours. The maximum weight percent of uranium in the alloy is about 40%. The average is about 8% to 12%. Due to criticality considerations, no more than two kilograms of U-235 (enriched) would be melted at one time and two ingots could be made from this. The maximum weight of any alloyed batch would be about 80 lbs.

Powdered compacts are also made in the same building containing the vacuum furnace (building #2). Mixtures of uranium oxide and stainless steel powders are weighed, blended and pressed. Weighing and pressing are done in ventilated dry boxes. The compacts are put in a bag for transport, sintered in an exhausted furnace, stamped and fitted into plates. Stainless steel plates are placed on either side and welded around the edges. The sandwich is heated in a hydrogen atmosphere furnace, rolled, sheared and then handled in a manner similar to that previously described. These operations are also performed in buildings #2 and #9. The production welding in building #9 involves the heliarc process and is unventilated.

A.E.C. Plant

This is building #1 and involves the pressure bonding of uranium in aluminum cans. Due to security reasons, a detailed description of the operations will not be given. Included, however, are nitric acid and caustic cleaning, nickel plating, molybdenum sulfide spraying, heat and pressure bonding, aluminum trimming and wire brushing and cleaning of die parts.

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Building #21

Production machining is done here. Lathes, grinders, cut-off wheels, etc. are provided for operations on normal bare uranium. The machinery is run wet.

Burning Building #3

This is a separate building used to burn scrap, uranium pellets and contaminated waste. Burning is done in trays set in enclosed transit hoods provided with slots in the front for raking the material. The burned residue is subsequently dumped from the trays into drums resting on the floor of the enclosure. Burning is now done about once a week.

Ventilation and Measurements

Commercial Plant

Building #2

The powdered compact dry boxes, vacuum furnace and ingot hood are exhausted in one system. A filter box located on the roof and containing AAF Deep Bed Filters is used as the dust collector. Velocities of 200 fpm were found in the openings of the hood containing the press and 300 to 400 fpm through the air lock opening in the weigh hood. Compacts were not being made at this time. The vacuum furnace was also not in operation as changes in its construction and ventilation were in progress. About 400 fpm was measured at the edge of the canopy hood over the rolling mill.

Building #9

The sintering furnace exhaust system also includes an AAF Deep Bed Filter unit as a dust collector.

Other exhaust systems are provided for several additional operations not previously mentioned which are performed during the forming and finishing of the elements. These are as follows:

1. Spraying a sodium silicate bonding material. This is done in a booth on a table. The average velocity through the opening was about 75 fpm. The space from the floor to the table top was open, short circuiting air. Baffles were not provided.
2. Degreasing - This is done in an electrically heated perchlorethylene vapor degreaser measuring 38" x 48" and having a freeboard of 17". Cooling coils are provided, as is one thermostat at the level of the coils. A hoist is provided but hand operation is practised. Standard

June 11, 1959

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ventilation by lateral slots on the two long sides is provided. The ventilation rate was about 20 cfm per sq. ft.

3. Cleaning in hot water, alkali, acid. There are 8 small tanks on a stand in an enclosing hood having an average face velocity of 50 fpm.
4. Removal of heat from an electrically heated aluminum brazing furnace in the assembly room. The canopy hood provided at this oven was ventilated to maintain an inward velocity at its edge of 100 to 150 fpm.
5. An electrostatic precipitator collection system is provided for a centerless grinder, lathe, cut-off machine and rod straightener in the north east corner of the room.

In addition there are 2 hoods in the laboratory where accountability control analyses, scrap reprocessing, ingot sample testing, etc. are performed. Face velocities of 25 to 50 fpm were found.

AAFG Plant]

1. Two booths are provided for the spraying of a water-base solution of molybdenum disulfide. Average velocity through the booths was 75 to 100 fpm.
2. Aluminum trimming and wire brush cleaning of the dies are exhausted in one system. Velocities of 150 to 400 fpm were measured in the hood openings. These operations do not give rise to uranium dust. A general air inlet from an office and an exhaust line from a vacuum pump are also included in this system. A dust collector is not provided. Rectangular piping is used, and the branch pipe from the die cleaning machine enters directly into the main pipe at its end.
3. Cleaning tanks are exhausted by rear slots with tapered connections and 50 to 100 fpm was measured at the tank edge.

Building #21]

Two exhaust systems including filter boxes with IAF Deep Bed Filters are provided for the production machines. Some machines have enclosing hoods and some are exhausted by open end pipes. None of these machines were in operation and tests were not made.

Brazing Building

About 300 to 400 fpm was measured in the hood slots.

Two deep mat filter units are provided for collecting the dust released during this operation. These filter boxes and the others are equipped with manometers to measure the pressure drop across the units. The fans are on the clean sides of the filters. The units are inspected and

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filters changed monthly, being sprayed with varnish for dust suppression before removal. The used filters are drummed and shipped for disposal.

Air Tests

Air tests were taken at those operations in progress at the time of the visit. All results indicated concentrations comparable to the normal background. The locations were as follows:

1. Rolling mill in building #2 - breathing zone - hot rolling clad, sheared plates containing 18% U.235.
2. Rolling mill in building #2 - breathing zone - hot rolling clad, sheared plates containing 18% U.235.
3. In accountability vault - bldg. #9 - general air.
4. Rolling mill in building #9 - breathing zone - hot rolling clad, powdered cores
5. Rolling mill in building #9 - breathing zone - hot rolling clad, powdered cores
6. Shearing two plates building #9 - breathing zone - plates contain 2 gms. of uranium
7. Storage room building #1 - general air

The company has extensive records of air samples taken throughout the plants, dating back many years. All new operations are surveyed and a complete air sample survey is made at least every six months. Of the samples taken this year, results exceeding the maximum permissible level of about 100 disintegrations per minute per cubic meter of air, were found while weighing and compacting uranium oxide powder and at a turning machine used to cut rods to size. In the first case, the company claims to have eliminated the problem by redesigning the hoods, and in the second instance indicated that the amount of time actually spent at the operation was too small to classify it as hazardous. The velocities obtained at the powder weighing and compacting hoods should be adequate to control the hazard.

Individual time weighted average calculations are not made because the company feels it is unnecessary.

Outdoor monitoring is done. Thus far the results have indicated concentrations low enough not to be considered a problem.

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External Radiation

Radiation measurements were made with a Juno meter in buildings #1, #2 and #9. The highest reading recorded was 50 mr/hr above a box of normal uranium blanks in the storage room of the A.S.C. building. This is mostly beta radiation and the intensity falls off so that a measurement about 3 feet above the box indicated a rate of 4 mr/hr.

Employees who may be in contact with uranium wear film badges which are checked weekly. This year's records indicate that in only one week for one person did the combined beta, gamma readings exceed 300 mrem. In this case the total was 325 mrem (285 mr beta). This man works in the plating area of the A.S.C. plant where close contact with the material is necessary.

Weekly radiation surveys are conducted by the plant's health and safety officer, including the taking of swipe samples. Decontamination methods are recommended as needed.

Accountability & Criticality

Commercial Plant - Buildings #2 and #9

Due to the expense of the materials and the fact that an accidental chain reaction may occur with uranium under certain conditions of enrichment, concentration, density, quantity, geometry, etc., extreme care is exercised in the handling, storage and processing of the materials and elements. One man per shift is in charge of the accountability vault in building #9. This involves checking the weight of incoming materials, the batch products, ingots and melt products. Extreme caution is exercised to insure that critical masses of material are not brought into the same processing area. Processed material in various stages of completion is also stored in racks separated so as to prevent interaction of fissionable materials. Raw material is kept in bird cages which insure that fissionable material can never be closer than about 2 feet from the next storage package.

Only non-critical quantities of finished material are allowed in the inspection room. About 10 stations having yellow lines painted on the floor outlining their boundaries are provided. Material cannot be moved beyond these confines.

A.S.C. Plant

There is no criticality problem here because the quantity of material uranium needed to start and sustain a chain reaction greatly exceeds the amounts of uranium in the plant.

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Medical

A physician is in the plant twice a day. Pre-employment examinations are given and routine physical examinations are conducted every 12 to 18 months. Urine samples are taken at new job locations, when a fire occurs, or when an air sample indicates high results.

Personal Hygiene

The company supplies the workers with pants, gloves, shirts, lab coats and plastic aprons at least twice a week. Shoe coverings are required for entry into some areas. Laundry is handled twice a week by a commercial laundry out of state. Lockers and showers are provided although there are no one way exits. Respirators are not required for any operations presently performed. There are gas masks, dust respirators, and air supplied respirators on hand for emergencies.

Pyrophoricity

Chips, trimmings, etc. from machining operations are allowed to accumulate in the building to the extent of filling 3/4 of a 5 gallon can. Thereafter they are stored in covered 30 gallon cans outside the building before being burned in the burning building. No quantity of scrap can be stored in the building overnight. The material is stored as it is formed in the operation, coated with coolant. The company reports no uranium fires in the past two-years. Ansul dry powder and G-1 powder are used in the machining area as a fire extinguisher. CO₂, soda-acid, foam and water are also available.

Porter service is provided. Mostly wet scrubbing is done and very seldom is vacuuming performed. Sweeping is not used. Adequate labeling of equipment, areas, etc. with radiation signs was noted.

Discussion

A.K.C. Plant

The dust hazard associated with this plant appears to be minimal because the raw uranium is plated almost immediately at the start of the operation and before that is handled as a massive cold piece.

Although the exhaust system for the aluminum trimming and die wire brushing operations is improperly designed, there does not appear to be any hazard associated with these operations so that the existing installation will probably be satisfactory.

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Commercial Plant

This plant is essentially a job and development shop, processing many different types of articles. All manufacturing operations are not in progress every day. The criticality problem also limits the extent of the operations. It would thus be extremely difficult and time-consuming to make a complete survey at these premises. Furthermore, the nature and location of the operations appear to be in a constant state of flux, also hindering a proper health evaluation. Therefore, since they appear to have been obtained properly, it is felt that the company's air sampling records can be used as an indication of conditions. Although these records show, in general, favorable results, many readings are not strictly applicable in determining the present situation since they are old and were taken at different locations and under different conditions than exist today. However, although recent air samples at all the potentially hazardous operations had not been taken at this time, it is likely that where local ventilation is provided the present control is as good as, if not better than, that previously recorded. This applies as well to other areas besides the commercial building. In addition, observations and the limited air tests made indicate that many operations do not release uranium dust to the air because they are performed after the metal has been clad.

There are certain uncontrolled operations, however, such as weighing in the accountability area (2 yr. old records indicate extremely high dust concentrations while weighing U-235 pellets), hot rolling of unclad material in building #9 and the shearing and punching of unclad material which tend to give rise to airborne contamination. Although corroborative air tests could not be made, it would appear that on the basis of observations, reports in the literature, and knowledge of the operations excessive dust concentrations could be obtained. Despite the company's claim that these operations have been checked carefully to insure no loss of material and excessive airborne contamination, and although hot rolling is done with a lubricant to coat the uranium and prevent excessive oxidation, it is felt that, without ventilation, incidents may occur resulting in massive exposures to the workers.

The degreaser, sodium silicate bonding spray booth, and laboratory hoods in building #9 are not operating in accordance with good engineering practice or New York State Code Rule requirements.

The performance of welding, particularly heliarc welding in building #9 with its potential generation of excessive quantities of ozone may also tend to injure the workers' health.

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General

The filter box dust collectors provided for many of the operations are not deemed too desirable. The workers may be exposed to excessive dust concentrations while changing filters, despite the spraying which is done, and excessive building up of dust on the filters can cause reduced air flow at the hoods with subsequent worker exposure.

External Radiation

The external radiation hazard appears to be quite slight. For all practical purposes, this hazard is due primarily to beta particles. The alpha emissions will not penetrate the outer layer of skin and the amount of gamma radiation is negligible. The beta radiation is kept under control by the practice of having the employees handling the uranium wear leather palm gloves. Therefore, the film badge readings, which this year showed only one weekly exposure slightly in excess of 300 mr. may not be completely indicative of the actual personnel exposure because of the protection offered by the gloves and other clothing. A weekly permissible dose rate of 600 mrem may also be considered to be applicable in this instance since Code 38 permits this rate in the skin for employees whose entire body or major portion thereof is exposed to radiation from external sources.

CONCLUSIONS

The plants appear to be operating in substantial compliance with Code Bulletin No. 38 and in general to be providing proper facilities and trained personnel for the detection and control of contaminants and external radiation present in quantities which would tend to injure the workers' health. However, as a safety factor, to prevent any potential massive internal exposure to radioactive materials as well as to forestall any unsafe future condition caused by the operation of the more standard equipment, it is felt that additional control or modification of existing conditions as indicated below is necessary.

RECOMMENDATIONS

1. Local exhaust ventilation should be provided for
 - a) weighing operations in the accountability section,
 - b) hot rolling of unclad material in building #9, and
 - c) shearing and punching operations on unclad materials.

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2. The filter box dust collectors should be replaced by continuous cleaning cloth arrestors or other suitable types which can be cleaned externally and which have constant pressure drops so that uniform air flow at the hoods will be maintained. This type of collector should also be used in all future installations.
3. Local exhaust ventilation should be provided for production welding in building #9. Local hoods as indicated on engineering plate #166 exhausted to maintain at least 100 fpm at the arc can probably be used.
4. The degreaser ventilation rate should be increased to maintain at least 60 cfm per square foot of tank area.
 - a) A thermostat should be provided in the liquid zone connected to control or shut off the source of heat when the contents reach a temperature not higher than 20° in excess of the boiling point of the uncontaminated solvent.
 - b) If not already regulated, the hoist speed should be set not to exceed 11 feet per minute.
5. The space between the floor and table top in the sodium silicate bonding hood should be covered and baffles provided in the hood.
6. The ventilation rate in the laboratory hoods should be increased to maintain at least 100 fpm through the open areas. If not already provided, adequate filters should be installed for cleaning the air before it is discharged to the out of doors.
7. Letter of recommendations to company.

Irving Kingsley
Sr. Industrial Hygiene Engineer

Jack Baliff, P.E.
Chief, Engineering Section

JBH
IX

SYL00051077

SILVANIA-CORNING NUCLEAR CORPORATION
Willets Point Boulevard
Bayside, New York

TO: BAY-10
70-97
File

March 25, 1957

DOCKETED
U.C. E.C.
MAR 28 1957

Division of Civilian Application
U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Attention: Mr. Lyall Johnson

Subject: SPECIAL NUCLEAR MATERIAL LICENSE

LOCKED OFFICER

Gentlemen:

Sylvania-Corning Nuclear Corporation desires to obtain a license that will permit it to receive, possess, use and transfer special nuclear material. The plant and personnel that we will utilize under the proposed license will be the same as those now covered by License No. SNM-57, held by Sylvania Electric Products Inc. These will be transferred to Sylvania-Corning Nuclear Corporation on April 1, 1957. Therefore, as the technical portion of the present application, we wish to incorporate by reference Sylvania's application of October 29, 1956 and its supplement of November 14, 1956.

The corporate information required under Section 70.22 of the Special Nuclear Material Regulation (10 CFR 70) is included as Appendix A to this letter.

On April 1, Sylvania-Corning Nuclear Corporation will acquire by assignment substantially all of the assets, liabilities and obligations of the present Atomic Energy Division of Sylvania Electric Products Inc. In addition to the foregoing, equivalent contributions will be made by Corning Glass Works. We will then have a net worth of between five and six million dollars and our cash and receivables will total approximately four million dollars. We feel that we will, therefore, be well qualified to engage in the proposed activities in accordance with the regulations of 10 CFR 70.

Since some of Sylvania's present contracts involving the use of special nuclear material will be assigned to us on April 1, 1957, we would greatly appreciate receipt of this license by that date.

State of New York (ss
County of Queens)

Very truly yours

SILVANIA-CORNING NUCLEAR CORPORATION

Sworn to before me this 25th day of
March, 1957, at Bayside, N. Y.

Garth W. Edwards
Controller

James H. Brouthers
Notary Public

JAMES H. BROUTHERS
Notary Public, State of New York
No. 52-5468800, Suffolk County
Certificate filed in Queens County
Term Expires March 30, 1958

3-25-57
Brouthers

SYLVANIA ELECTRIC PRODUCTS INC.



Atomic Energy Division
BAYSIDE, NEW YORK

March 13, 1957

Division of Civilian Application (4)
U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Attention: Mr. Lyall Johnson

Subject: SOURCE MATERIAL LICENSE NO. C-3416

Gentlemen:

As you know, on or about April 1, 1957, most of the work now being performed by the Atomic Energy Division of Sylvania Electric Products Inc. will be assigned to a new company, Sylvania-Corning Nuclear Corporation, which will be jointly owned by Sylvania Electric Products Inc. and Corning Glass Works.

In order to perform this commercial work under the Civilian Application Program, the new Company will need a source material license. Sylvania's Source Material License No. C-3416 will, therefore, not be required by the parent Company after April 1. Would you please either transfer that license to the new Corporation or cancel it and issue a new license to Sylvania-Corning Nuclear Corporation. We would like this application to include, by reference, the information contained in Sylvania's previous applications with regard to License No. C-3416. These applications were the letter of November 3, 1955 from Mr. W. E. Kingston to Mr. H. L. Price and my letters of March 5, 1956 and December 14, 1956 to Mr. Lyall Johnson.

We hope that the modification or new license issued on the basis of this letter will become effective as of April 1.

Very truly yours

SYLVANIA ELECTRIC PRODUCTS INC.

J. M. McTavish / a.m.

James McTavish
Purchasing Agent

JM:ral

Office Memorandum • UNITED STATES GOVERNMENT

TO : Harold L. Price, Director
Division of Licensing and Regulation

FROM : Marvin M. Mann, Assistant Director for Compliance
Division of Inspection *M*

SUBJECT: SYLVANIA-CORNING NUCLEAR CORPORATION - LICENSE NOS. SRM-141 AND SRM-82

SYMBOL: INS:MMM

Rec'd 9/9/58
Q
By me 9-9-58

It appears from the attached report and the memorandum accompanying it that safety of operation in the subject plant depends largely on correction action by individuals. The processes operated in this plant do not lend themselves to the use of "ever safe" equipment throughout as easily as do some chemical processes. Therefore, it is almost unavoidable that certain points in the operation require correct procedural action. The report and memorandum firmly suggest that safety of operation could be substantially increased through more emphasis on written procedure and procedural check by supervision. We note further that new quarters for the subject operations, now nearing completion, should reduce crowding and allow for better operation.

We concur with the recommendations of the New York Inspection Division, particularly in regard to thorough review of management, organization, and procedure prior to action on the application of the subject company now pending.

Attachment--

Handed to J. C. Delaney on
9-5-58, by L. D. Low

the material is signed
9-16-
15 days ago

B-61

USNRC 000447

NRC
PDR
FOIA 01-257

8-20-58

Marvin M. Kamm, Assistant Director
Division of Inspection, Headquarters

Paul B. Klevin, Acting Director
Inspection Division, NRC

TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT - 10 CFR 70

SYMBOL: DES,PK

Transmitted herewith is the following inspection report involving noncompliance:

Sylvania-Gorning Nuclear Corporation
Bayside, New York
Hicksville, New York

License Nos. SNM-141
SNM-82

No items of noncompliance were noted under License SNM-141.

The following items of noncompliance, noted under License SNM-82, were brought to the attention of Mr. Boyd Metz:

10 CFR 70

- (1) No individual is serving in capacity of "Criticality Engineer" as job and title are described on pages 2 and 3 of original application No. N-34 Revised (See item III A 2 of report details).
- (2) All movement of tote trays or racks are not performed by accountability representative as described on page 4 of application No. N-34 Revised (See item III A 2 of report details).
- (3) In-process safes were closer than 10' as described on page 4 of application No. N-34 Revised (See item III A 4 of report details).
- (4) All of the process materials were not stored in tote trays or racks and proper spacing was not assured in in-process storage safes as described on pages 4 and 5 of application No. N-34 Revised (See item III A 4 of report details).

(5) All personnel are not issued weekly film badges; do not have urine analysis run weekly; do not have complete blood counts run every six months as described on page 7 of application No. H-34 Revised (See item V B, C, of report details).

10 C/A 20

(6) 20.203 "Caution Signs, Labels and Signals" - (e)(1) "Additional Requirements" - in that safes used to store enriched U were not posted with the proper radiation sign and symbol (See item III A 4 of report details).

(7) 20.203 "Caution Signs, Labels and Signals" - (f)(1) "Containers" - in that bird cages, containers, stored shipping coffins, containing in excess of 25 gas of enriched uranium were not labeled with proper sign and symbol (See item III A 4 of report details).

With regard to item 1 above, Mr. Sheldon Straus has been reported to be hired as a Criticality Engineer. His qualifications and experience are included in EXHIBIT "A" of report details.

With regard to items 2 - 4, we feel that these deviations from the application are serious violations. Because of the crowded facilities, commingling of contract and license materials, and lack of any internal review of the operations from a criticality standpoint, the protection against a criticality accident is not assured.

With respect to item 3, we feel that this noncompliance item could be serious inasmuch as the amount of special nuclear material available to the licensee is limited to that which may be used in accordance with the procedures described in application No. H-34 Revised. Nowhere in the application are there any specifications as to the maximum amount of special nuclear material to be stored in a safe.

Item 5, although noncompliance by virtue of non-conformity with the statements of the application, presents no hazard.

Items 6 - 7 were discussed with Mr. Hiale, Safety Engineer, who agreed to post and label as required by the Federal Regulations.

We wish to note that although the lack of positive control over additions of enriched material into the unmarked containers

located outside the Quality Control Laboratory (as noted on page 8 of report details) is not a Part 70 noncompliance item, it can pose a significant hazard inasmuch as the chemist and accountability representative had no way of knowing whether they were exceeding batch limits until they checked records located in another area of the plant.

We feel that the system followed by Sylvania places the ultimate responsibility for protection against criticality in the hands of the accountability representative. This individual, having no training or experience in critical control aspects of nuclear safety, and who has to worry about material balances, cannot possibly perform an adequate job. In our opinion, there is a need for periodic internal review of all the fabrication operations from a criticality viewpoint. This function, as well as establishing criticality limits, should be the function of an individual having experience in reactor physics and criticality evaluations.

We feel that the present organizational setup at Sylvania-Corning's Hicksville facility leaves much to be desired. As noted under III & 2 of report details, the Plant Manager, B. Wote, reports directly to L. Davonport, President of Sylvania-Corning Nuclear Corporation. Only two other responsible individuals in the plant, S. Meyers and L. Manus, Manufacturing Superintendent and Shop Production Foreman, respectively, report directly to Wote. All other responsible individuals connected with the special nuclear program report to Division Directors or Manager. For example, the Accountability Representative reports to the Controller; the Health and Safety Representatives report to the Director of Engineering; and even more important, the Criticality Engineer reports directly to the Director of Engineering. All of the division directors are located at Bay Side, New York. Delay in communications are quite probable and such delay could possibly result in an unfavorable situation.

We recommend that a letter be sent to the licensee requiring correction of the above items of noncompliance. In addition, the licensee should be requested to submit copies of their operational and nuclear safety procedures for review by DLR. With regard to the above, it should be noted that the licensee has first been awarded the nuclear fuel fabrication job for Power Reactor Development Co., Inc. (PRDC).

We strongly recommend that any amendment to the present license, 204-32 (relative to P.D. fuel element fabrication), not be approved until written operational, nuclear safety and administrative procedures are reviewed and considered adequate.

Enclosure:

Imp. rpt. (4 cpy.)

USNRC 000450

U. S. ATOMIC ENERGY COMMISSION
INSPECTION DIVISION
NEW YORK OPERATIONS OFFICE

By: F. B. Klevin, Inspection Division Date of Inspection: June 9-10, 1958
New York Operations Office
R. H. Engelken, Inspection Division Type of Inspection: Initial
San Francisco Operations Office
10 CFR Parts applicable: 20 - 70

Title: INSPECTION OF SYLVANIA-CORNING NUCLEAR CORPORATION, INC., NEW YORK
SNM-82, 141

SUMMARY

An inspection of activities related to the use of special nuclear materials was conducted at the facilities of Sylvania-Corning Nuclear Corporation, Hicksville, New York, and Bayside, New York, on June 9-10, 1958. This company is presently licensed to possess special nuclear materials under two separate licenses: SNM-82 as amended authorizing metallic uranium enriched in U²³⁵ isotope, is limited to that which may be used in accordance with procedures described in the licensee's applications of March 27, 1957, July 19, 1957 and letter of August 14, 1957; and SNM-141, authorizing up to 100 gms of U²³⁵ contained in uranium (as UO₂) enriched in U²³⁵ isotope for fabrication of compacts using the procedures described in the licensee's application of November 15, 1957. At the time of the inspection, work was in progress under SNM-82; activity under SNM-141 had been completed in April, 1958.

Inspection consisted of a visual inspection of all facilities associated with licensed activity. Administrative control procedures, including receipt, handling, processing and storage of special nuclear material were reviewed and discussed with Sylvania personnel. Criticality control, accountability, health physics, fire and accident prevention and associated records were reviewed in detail.

It was concluded from the inspection that special nuclear materials are not being utilized in substantial accord with the provision of 10 CFR 70 and 20. Under SNM-82, it was found that there were several instances of deviation from the procedures described in the licensee's applications. These items are included under items of non-compliance of this report and are detailed under Nuclear Safety and Radiological Health and Safety Sections of this report. No items of non-compliance were found under SNM-141.

All deficiencies and items of non-compliance under SNM-82 noted in the report were discussed with Sylvania-Corning Management, who did not take issue with any of the items discussed. Sylvania-Corning Management stated that with the new plant in operation, completion of written formal health and safety and operation rules and regulations, the operation at Hicksville will definitely be improved and the requirements of the Commission will be met.

Approved: F. B. Klevin, Acting Director
Date: AUG 20 1958

Distribution:

4 cys. Division of Inspection, Headquarters
2 cys. Inspection Division, NYOO

USNRC 000451

Part 70 Inspection

Date of Inspection: June 9-10, 1958

DETAILS

I. Introduction

An inspection of activities related to the use of special nuclear materials was conducted by R. H. Engalken, Inspection Division, SOO and P. B. Klevin, Inspection Division, NYOO, at the facilities of Sylvania-Corning Nuclear Corporation, Hicksville, New York and Bayside, New York, on June 9-10, 1958.

Sylvania-Corning's Hicksville plant A & B, which fabricates fuel elements both under AEC contract and under license, is under the administrative control of Boyd Metz, General Manufacturing Manager. Metz, who relieved John Robinson as Manager of plant B (Commercial Fuel Fabrication Plant) reports directly to Lee Davenport, President, Sylvania-Corning Nuclear Corporation. Metz has had previous experience with both Sylvania and Sylvania-Corning as Plant Manager of the Hicksville facility fabricating nuclear fuel elements under AEC contract.

Other Sylvania-Corning management and production personnel are identified and discussed under Nuclear Safety and Radiological Health and Safety sections of this report.

A. Scope of Inspection

Licenses: Sylvania-Corning Nuclear Corporation
Bayside, New York
Hicksville, New York

Licenses: Special Nuclear Materials Licenses

1. SRM-82 (as amended)

Metallic uranium enriched in U²³⁵ isotope - is limited to that which may be used in accordance with procedures described in the licensee's application of March 25 and July 19, 1957 and letter of August 14, 1957.

2. SRM-141

Up to 100 gas of U²³⁵ contained in uranium (as UO₂) enriched in the U²³⁵ isotope.

B. Personnel Contacted: - Hicksville, Long Island, New York - SRM-82

Boyd Metz, General Manufacturing Manager
Garth Edwards, Controller
Arthur Master, Contract Administrator
John Shannon, Production Control
Ed Moyer, Manufacturing Superintendent
M. H. Ball, Accountability Supervisor
Ed Jung, Accountability Representative
Lloyd Marz, Production Shop Superintendent
E. P. Larson, Sr. Engineer
H. Grieb, Health and Safety
John Miels, Health and Safety

Personnel Contacted: - Bayside, New York - SRM-141

J. L. Zambrov, Engineering Manager
William Donohoe, Accountability
H. Feltmann, Accountability
A. Masters, Contract Administrator

C. General Information

1. Inspection of the Sylvania-Corning Hicksville Plant (SDM-82) consisted of an inspection of the commercial fuel fabrication plant, Plant B, which included inspection of storage safes, vaults and production facilities within the plant which are used in the processing of special nuclear material. Accountability records, control and procedures were also reviewed. Procedures for receipt, handling, processing and storage was discussed with Sylvania-Corning personnel. Administrative control of licensed activities was also reviewed. Nuclear safety, fire and accident, and radiological health and safety aspects of the special nuclear material program were examined.
2. Inspection of the Sylvania-Corning Bayside, New York (SDM-141) plant consisted briefly of inspection of the laboratory and storage facilities. Work under license SDM-141, which began on February 5, 1953, was completed in April 1958. Accountability records were inspected.

II. Description of Facilities

The Commercial Fuel Fabrication Plant (Plant B) one of several buildings within a fenced enclosure, consists of a one story converted garage of approximately 5000 square feet in area. The plant, which is associated with the manufacture of reactor fuel, consists of a metal casting room, rolling mill, machining, welding and assembly areas, quality control laboratory, storage safes, and accountability rooms. A brief description of the above areas follows:

1. The Metal Casting room (approximately 12 x 15') contains an induction type furnace. Material is charged into the top furnace located on a platform 6' above ground level and the cast ingot removed from the bottom furnace located at street level.
2. The Rolling Mill area consists of three mills, a Blake and Johnson reversible rolling mill, a Stanat Combination mill, and a Fern Roll mill, and several heating furnaces located adjacent to the aforementioned mills.
3. Machining, welding and assembly areas contain a Bridgeport Dual press, a 200 ton press, a large Niagara shear, a Lodge and Shepley shear, Cincinnati Miller, several welding units, and other smaller pieces of machinery. In addition, a small radiography (x-ray) room and vapor degreasing tanks are available in the area. A 15 x 15' room containing acid, caustic, and neutral cleaning baths is used frequently to clean the fuel elements and plates. Cores are cleaned in the vapor degreasing tank.
4. A quality control laboratory, which contains the usual chemical laboratory equipment such as ventilated hoods, work bench, etc., is used to determine the percentage uranium in various stages of the process by chemical means only. No isotopic analysis is performed.
5. Storage safes for the containment of scrap, finished fuel elements, and material in process are located in several areas. Three locked safes are located in the assembly area. A description of material in these safes will be reported under "Storage."

6. The accountability room is more or less the central control point for materials accountability. This sprinklerless room, 15 x 20', contains three locked safes. In addition, the room is equipped with two scales, a Seedcor - Kohlbusch balance having a capacity of six kilograms, and a Sartorius-Werke balance having a capacity of 200 gms. Several larger work tables located in this room are used to hold tote trays containing material for either weighing or storage purposes.

The aforementioned areas and their contained fabrication equipment utilize all of the available 5000 square foot area. Crowded working conditions were observed to prevail in all areas. Messrs. Mann, Production Shop Superintendent and Jung, Accountability Representative, noted that the conditions of operation were rather poor, but stated that their company intends to move within several months into a newly erected commercial fabrication plant located within their property. The new one-story plant was visited and found to be complete from a construction viewpoint. However, most of the equipment had not been installed.

The general production shop layout was described by Mr. Mann. He stated that it would be far superior to the old facility in that it was better suited to isolating process batches of special nuclear material in normal production operations. He noted that the new building would include the following areas: Administration, Operations Process Control Laboratory, Inspection Accountability, Component Machining, Plant Engineering and Machine Shop, Shipping and Receiving Assembly, Rolling, Machining and Laboratory, Heating and Forming and Inspection.

III. Nuclear Safety

A. Criticality

1. General

There was no Criticality Engineer in the employ of the licensee at the time of inspection. Mr. William S. Rothwell, noted as Criticality Engineer in Application No. E-34, revised Application for Special Nuclear Material License, had never been in the employ of the licensee.

When asked how criticality limits and procedures had been established, Arthur Mastor, Contract Administrator, stated that these had been borrowed from various sources. Most of these limits and procedures had been established "as a result of information provided to us by others in this field and from various technical publications." He further stated that at the time of the inspection, no one in the employ of Sylvania fuel element facility had the technical background or experience necessary for making criticality calculations.

Mr. Mastor stated he uses the services of Dr. Rudy Sher of Brookhaven National Laboratory, as a Criticality Consultant. Dr. Sher works for Dr. Herbert Kouts at Brookhaven. Sher was reported to have been used on several occasions in the past to review feasibility reports submitted to the Commission and to assist in establishing batch limits or storage limitations on new job proposals for licensed operations. He is also called, according to the management, on occasions when there is a question of living up to the license or when there is any question related to periodic revision of material amounts. Sher, in his letters to the licensee, has provided the licensee with criticality working levels required in the use of the material. This information has been provided to the accountability representative, Health and Safety, and the top production personnel.

No written administrative procedures or instructions have been provided to plant personnel regarding criticality work limits.

An attempt was made to contact Dr. Sher at Brookhaven National Laboratory to determine the number of times he had been called in by Sylvania as a consultant and determine exactly the type of criticality evaluation made by him. Dr. Sher departed for France on July 2, 1958 and was not expected to return to the United States for a year.

Since this inspection, a letter to this office from Garth Edwards, Controller, Sylvania-Corning Nuclear Corporation, dated June 24, 1958, noted that Sheldon Strauss, physicist, has been hired by the company. The letter included as EXHIBIT "A" states that Strauss, a Reactor Engineer, who "has had extensive experience in performing reactor physics calculations, including those pertaining to criticality", will review production procedures from a criticality standpoint. Strauss has a BS degree from City College of New York, MS degree from New York University and has attended the Oak Ridge School of Reactor Technology from 1954 - 1955. Strauss reports directly to the Director of Engineering, L. W. Kates.

2. Organization and Procedures

As noted prior in the report, Boyd Metz, Plant General Manager, reports directly to Lee Davenport, President, Sylvania-Corning Nuclear Corporation. E. Meyer, Manufacturing Superintendent, reports directly to Metz. Lloyd Hamus, Production Shop Superintendent, reports to Meyer.

According to Mr. L. Hamus, written specifications have been prepared for him for individual fabrication operations by the Engineering Department. He, in turn, orally instructs production personnel on the production specifications. He further added that health and safety rules and regulations are being prepared by Mr. Grieb, Chief Safety Engineer, for each production operation, and that these regulations will be reviewed for operational safety and criticality.

Health and safety responsibilities are under Henry Grieb, Chief Safety Engineer and his assistant, John Miele, Safety Engineer. Both report directly to L. W. Kates, Director of Engineering. Both individuals have had previous experience in directing health and safety programs for contract projects involving special nuclear and source materials and their alloys in both solid and powder form. The safety engineers have the responsibility of enforcing compliance with federal and Sylvania-Corning's own regulations both for nuclear and non-nuclear health and safety.

The Accountability Representative, Ed Jung, is responsible for special nuclear material and source material accountability, reports to Accountability Supervisor, Milton Hall, who, in turn, reports to T. O'Connor, Manager, Security and Office Management, who is accountable to Garth Edwards, Controller.

This installation employing significant quantities of fissionable material places strong reliance upon the accountability representative in issuing materials in order to minimize the possibility of assembling a critical mass. The accountability representative has no training or experience in criticality control aspects of nuclear safety. The accountability representative has the responsibility of initial receipt, storage, issuance, and reissuance of enriched material, and has reportability for control of movement of special nuclear materials throughout the plant in accordance with the criticality limitations initially set up by Sher. Some of the control regulations and limitations that are employed at the Commercial Fuel Plant are defined by the management as follows:

- (1) Incoming shipments arrive from Oak Ridge in water tight 21" cube bird cages, limited by Dr. Sher to 9 kg in case of possible collapse of cage. Bird cage critical mass under flooding conditions is 22.6 kg of 9% U, assuming the bird cage is water tight.
- (2) All material is checked for contamination by the plant safety engineer prior to being accepted and stored in racks and safes. Fully enhanced uranium in metallic form up to 2000 grams of total uranium was stored in plastic bottles and rigidly fixed in safe racks, on a spacing of 21" from center to center.
- (3) Proper spacing of material in process safes is accomplished by storing all material in tote trays. The tote trays, which are constructed of metal, are 16" long x 10" wide x 6" high in inside dimensions. Storage safes or in-process safes were stated not to be nearer each other than 10". Mr. Jung stated that Dr. Sher, in setting up criticality limits, uses a standard safety factor of 2-1/2 in making determinations of safe storage for scrap, core, and clad and unclad plates. Storage of material in tote trays and safes is discussed under "Storage."
- (4) Tote trays are tagged by the accountability representative in a color to denote type of operation and material.
- (5) All movement of material in tote trays and racks is performed by the accountability representatives.
Inquiry of production workers and accountability representatives revealed that there were occasions when production workers themselves transferred material from one operating station to another without approval of the accountability representative.
- (6) Tote trays containing scrap are limited to a maximum of 1500 grams of fully enhanced uranium or its equivalent of lower enhanced uranium. The scrap material is only removed by the accountability representative.
- (7) The amount of uranium metal incorporated into a melt is limited to 2000 grams of fully enriched uranium. On the Industrial Reactor Laboratory (IRL) and the May Master University fuel element fabrication jobs, the melts consist of 1140 grams total U, while for the BNL job, the melts are made up of approximately 508 grams total U. The melt is poured into at least two molds.
- (8) The melting room is limited to a total of 2000 grams of enhanced uranium at any one time.
- (9) A batch limitation of 350 gms of fully enhanced uranium or its equivalent is set for punch press operations and is maintained at all points during finishing operations (20 plates for 20 punchings).
- (10) Furnaces used for heating and rolling the picture frames and cover plates are equipped with racks that hold only 20 plates spaced on 3/4" centers. The furnaces are located on 58" centers.

(11) There is only one rack allowed at any one operation, except an assembly where 3 racks may contain as much as 1750 grams. A limit of 250 grams or equivalent of a mixed uranium is set for chemical wastes which are initially collected in a covered beaker as solution, then dried. Material is stored in a locked cupboard inside steel quart cans measuring 4-1/4" in diameter x 5" in height. The storage shelves are 9" apart, so that there is a 4" space above each row of jars.

(12) Cleaning solutions from the cleaning tanks are limited to 10 grams of fully enhanced uranium or equivalent, each. The solution is evaporated for dryness before the uranium content reaches 10 gram value.

It was observed that outside the Quality Control Laboratory, where 35 net determinations are made by dichromate titration analysis, 180 grams of U total material is stored in the aisleway in each of two 5 gallon containers, with no markings or labels. In addition, one 50 gallon container containing a total U of 50 grams was noted stored in a similar manner. Upon questioning Mr. Jung and the quality control chemist, it was found that neither individual had knowledge of H₂O to U²³⁵ ratios of the solution. There is no positive control for additions of material at this point. Neither the chemist nor the accountability representative had any way of knowing if they were exceeding established batch limits. They did not know what quantity of material was in containers without resorting to records in other sections of the plant.

(13) Metal shipping containers having inside dimensions of 52" x 19" x 14" carrying 6 fuel elements, each of which contains 250 grams of fully enhanced uranium or equivalent in the center of 3-1/2" centers. The container is similar to that used by Oak Ridge to ship MTR type elements.

3. Fabrication Operations

Following is a brief description of the operations involved in the fabrication of fuel elements from initial receipt until shipment.

- (1) Material is obtained from Oak Ridge in standard water tight bird cages (10" diameter x 5" deep) in shipments up to 12 kg U²³⁵ (9% enriched) in the form of pellets and broken buttons. In November, 1957, a 16 kg shipment was received in a bird cage and a complaint was made by Sylvania to Oak Ridge regarding this high material shipment.
- (2) Incoming raw material is weighed and stored in the raw materials safe.
- (3) The uranium-aluminum charge is weighed, poured into a furnace pot, and melted by induction heat, the uranium is poured into a mold to cool. Up to 1140 gram total uranium is charged into the furnace for licensed material. Approximately 500 grams per charge is used for the Brookhaven material. Contaminated uranium is removed from the mold on a Bridgeport drill press.

- (4) After the casting is removed from the mold, the ingot is taken back to the accountability room, where it is weighed, weight recorded, and then issued to the rolling area. The ingot is heated to rolling temperature in a furnace, handled manually, and is hot rolled to desired thickness in a Blake and Johnson reversible rolling mill. Samples are made of the core plate and chemically analyzed to determine the distribution and alloy percentage of the uranium in the core material.
- (5) The plates are returned to the fabrication area, where the bare plate is cut in half lengthwise on a Niagara shear, identified by numbers, radiographed, and punched on an E. W. Bliss punch press in order to obtain samples for chemical analysis. The material is returned to accountability for weighing and recording of samples prior to submission to the laboratory for chemical analysis as to uranium content only. The inspectors were informed that no isotopic analysis for enriched uranium is performed by the licensee on licensed materials and that only contract materials are sent to New Brunswick laboratory for isotopic analysis.
- (6) The plates are reissued to the rolling area, where each plate is rolled to thickness on a Blake and Johnson rolling mill and a Stanat Combination mill.
- (7) A Niagara shear and Bliss punch press are used to produce picture frames from the 2 8 aluminum plate and to punch cores composed of U-Al. The plates and cores are subsequently degreased. The material is then returned to accountability for weighing and release or storage.
- (8) Two cores are pressed in each picture frame on a 200 ton hydraulic press. A double core frame assembly is then heated in a furnace and hot rolled in a Perm roll mill. The rolled plate is cut lengthwise on a Niagara shear into single core frames, which are conveyed to a chemical cleaning area, cleaned and returned to the fabrication area. They are placed between aluminum cover plates and welded into a sandwich assembly.
- (9) Sandwiches are initially heated in the furnace, hot rolled in a Blake-Johnson rolling mill, and then cold rolled.
- (10) The sandwiches are fluoroscoped, scribed and radiographed. The excess aluminum of a cover plate is removed on a Lodge & Shopley shear. The aluminum side plates are manually deburred and trimmed to proper dimension on a Cincinnati miller.
- (11) The plates are then cleaned, numbered, inspected and formed. BSL plates are notched, while the IRL and Master plates are assembled into elements with side plates.
- (12) The plates are then chemically cleaned, assembled and given final inspection.
- (13) Accountability then receives finished products for packaging and shipping.

All of the fabrication operations were observed with the exception of (1), (2) and (10) above.

At the time of the inspection, work on flat uranium-aluminum plates (93% enriched) was being performed for BNL under a subcontract. The BNL flat plates were clad with 2-3 aluminum and contain 5.08 grams per plate. Batch limit of plates in process is 60 plates. Licensed material was being processed for the Industrial Reactor Laboratory (IRL) and Mac Masters University. Cores for these plates consist of 18 weight percent U-Al, fully enriched. There is 11.3 - 12.03 grams total uranium content per plate. Limit on plates in process is 20 plates. Both the IRL and Mac Master jobs are being performed for American Machine and Foundry, builder of these reactors. Another operation performed by Netherlands is under American Machine and Foundry contract, but was not in progress at the time of this inspection.

4. Storage

Storage safes for storage of incoming, in process and completed materials are located in the Plant B and the new building. A description of the storage safes and materials contained therein follows:

- (1) Two bird cages (20" standard type) containing 3.5 kg and 5.4 kg were noted stored in the Raw Materials safe located in the accountability room. The material was separated by a distance of 23". Bolts were removed from the top of the 10 1/2" diameter x 5" deep material container of each cage and therefore were not water tight. Bird cages were not labeled with the amounts of materials contained or with radiation caution sign and symbol. 1227 gas of BNL material was stored on the bottle shelf. Mr. Jung stated that a maximum of 12 kg is stored in the safe. A second safe with 5 shelves located in accountability room contained approximately 2.2 kg total U in the form of alloy scrap, melt charges for melt operation, and sample bottles. No amounts of material were on the tote trays or bottles, only identification number. The third safe contained approximately 500 gas of BNL plates in tote trays spread on three shelves. None of the safes were posted with the proper sign and symbol or were the tote trays and materials contained in each safe labeled with contents or radiation sign and symbol.
- (2) Assembly area storage safe was noted to be properly posted. The safe contained 6 - 90 gm IRL fuel elements (540 gas) on the shelf. These elements were not contained in tote trays.
- (3) Niagara Shear contains 3 safes. These safes are not separated by a distance of 10', although application for Special Nuclear Material No. N-31, revised, stated that safes will be no closer than 10 feet. It was found that three locked safes located in the work area behind the shears were separated so that the first safe was 2' from the second, while the third safe was approximately 5' away from the second. The safes were not posted with the proper radiation symbol and sign. A description of material in these safes follows:
 - (a) The first safe contained approximately 500 gas of BNL flat plates (contract) not in tote trays. The plates were stacked lengthwise (vertically) in the safe next to a tote tray containing 1 kg of scrap licensed material. This is one of the prime examples of commingling of license and contract materials due to the inadequate crowded working facilities.

- (b) A second safe containing 4 shelves contained ~ 1 kg total U, 2 tote trays containing 700 gms total U each.
- (c) The third safe contained 20 al clad plates containing a total of 167 gms U stocked horizontally on a shelf outside of any tote tray.

(4) In an aisleway directly outside the quality control laboratory, two 5 gallon containers containing a total of 180 gms total U and one 55 gallon container containing a total of 50 gms total U were not labeled with any sign or radiation symbol.

(5) A storage vault in the newly erected commercial fuel plant contained ~ 22 kg total U in the form of scrap, solutions, turnings, in process EML plates and completed elements inside shipping coffins. The coffins, each holding 6 elements in secured racks, contained approximately 1200 gms total U each. These containers were not labeled with proper radiation sign and symbol. EML fuel plates in process were stored in the center of the room on a wagon containing two shelves approximately 2' apart. 180 plates totaling 900 gms total U was stored on the top shelf outside of a tote tray, while 200 plates (1100 gms) was stored on the lower shelf. Licensed scrap solutions and solids were stored in 5 gallon containers approximately 1' apart. The 5 gallon containers contained total uranium from 47 gms to 129 gms of solution scrap in each container. None of the containers was labeled with proper sign and symbol.

Material stored in tote trays was identified by color code system but was not labeled as to amount of material contained. The accountability representative, through his code numbers, was able to identify the amounts of material in each safe after reviewing his records.

2. Fire and Accident

Henry Grieb and John Miele are responsible for the established fire and accident program, both nuclear and general plant safety.

A plant fire brigade is organized for emergency service to function in time of fire, explosion or any other catastrophic situation. Project personnel, according to Miele, have all been educated and instructed in the techniques involved in extinguishing and preventing the spread of fires.

Company policies and rules have been formulated and established to prevent accidents, including fires that could result in the spread of radioactive aerosols.

Portable fire extinguishers, G-1 powder, and standard fire hose apparatus are located throughout the plant. Miele made note of criticality situations due to flood of enriched materials and stated that uranium fires are not treated with water. He emphasized the following:

- (1) There is no sprinkler system in the plant.
- (2) Plant B is separated from other operating areas by a fire wall.
- (3) Fire alarms are accessible for reporting fires.
- (4) There is no flood hazard to the Plant B or the Ricksville facility by virtue of close proximity to streams or rivers.

3. Security

Plant B employs the same guard service used in Plant A, which is operated under prime contract with the Savannah River Operations Office. The entire Nicksville facilities are enclosed by a 6 - 8' steel fence and patrolled by a security force 24 hours a day.

Access to the Plant B fabrication area, accountability area, storage vaults, and safes is limited by written instruction and by badge issuance to authorized personnel. Plant security, Mr. Jung and two of his people are the only ones knowing the safe combinations.

IV. Accountability

(1) Strong reliance is placed on the accountability representative and his five assistants in issuing materials following the established batch limits. Masters stated that on occasion certain limited criticality calculations had been performed by Sber to establish criticality limits such as establishment of batch sizes of new jobs under consideration. Accountability personnel are responsible not only for accountability of special nuclear materials but also for seeing that enriched materials used in the various production operations are below those quantities which could achieve critical mass proportions. As noted previously in this report, Jung has had no experience in criticality evaluations.

(2) Accountability records are maintained of material by weight and number by E. Jung, Accountability Representative, for each particular job and for each of its component operations from the time incoming material is received until the finished product is obtained. Jung keeps records on official permanent and working records in which he keeps materially balanced. Records maintained for the following job components were noted: Raw Material, Melting and Core Production Process, Samples in solution, Reference samples, Remelt scrap, Unremelted scrap, Crucible turnings gains and loss from each operation, Plate fabrication, Plate control, Reject plates, Final assembly process and finished elements. For each of the above, records are kept according to project number, weight of material in grams and under the following columns: received, removed and disposition, and balance. Dates, requisition numbers, quantity of plates, material, uranium content, and U235 content are also included.

Individual logs are kept by accountability of all incoming shipments of various process operations, material storage and shipment materials. Logs for each individual licensed job is kept under a different color code system. A master log is kept by Jung in the accountability room for each individual job operation under project number.

(3) The accountability representative and his assistants weigh in all materials during in-process or storage stage and are responsible for relevance of the materials.

(4) Special Nuclear Material records were examined and found in order. The inventory record maintained by Jung indicated a total inventory of 60.2 kg total U (93% enriched). This inventory is distributed as follows: ~22 kg in new storage vault (new building), ~20 kg in Plant B storage safes, and ~19 kg in process.

Records of receipt, inventory, and sales or transfers were available and found to be in order.

3. 3. material analysis records are kept by the quality control laboratory and accountability representative. No isotopic analysis for ^{125}I content is performed on license materials. On contract material, records of isotopic analysis are maintained by accountability.

V. Radiologic Health and Safety

A. Organization and Procedures

Two safety engineers, Messrs. Grieb and Miele, have had experience in the organization and supervision in both non-nuclear and safety health programs and nuclear safety programs of AEC contract material for several years. Both individuals report to the Director of Engineering, and have the responsibility of enforcing regulations both pertinent to the 10 CFR 20 of the Federal Regulations and Sylvania's own Health and Safety Regulations. According to Miele, written instructions have been supplied to all personnel. These include safe handling of radioactive material and radiation producing equipment and radioactive materials. There has not been any inclusion of criticality limits in any of the supplied information. Miele stated that he is revising a Health and Safety Manual for the Sylvania Nuclear Corporation and that this should be available within the next few months. He further stated that Dr. Sher had informed him and other top supervisory personnel with regard to criticality limits. Miele also noted that both he and Henry Grieb, his immediate superior, are called in to review operations with respect to criticality, radiation hazards and health and safety.

B. Medical Program

Bio-assay and medical monitoring is performed by the company's physician for the Long Island area, Dr. Young. According to Grieb, urine samples are run on individuals when there is an accident; when a new program is initiated; or when air samples or direct radiation surveys indicate the presence of contamination. Complete blood counts and complete physical examinations are given to each employee every 18 months. A complete pre-employment and termination physicals are also given.

C. Personnel Monitoring

Film badges are worn by accountability, inspection, and melting personnel as X-ray users. The rest of the production personnel are not included in the film badge program. Film badges are supplied by Nuclearis Corporation of America on a weekly basis. Records of film badge results show no exposures in excess of 30 wrap beta, except for fluorescence personnel, whose film badge exposures average 100 mr/wk.

D. Radiation Monitoring Instrumentation

The following operable instrumentation was on hand at the time of the surveys:

Two ora lokator gamma survey meters (range 0-25 mr).

Two Simpson alpha gamma survey meters (range 0-12,500 counts per minute).

An alpha scintillation counter and sceler are available for analyzing air samples.

E. Survey Program

1. Direct Radiation

Incoming and outgoing shipments are all checked for contamination by the Safety Engineer.

Radiation surveys are made of all new operations. The period between surveys range from 6 to 8 months.

2. Inplant Air Monitoring

Air monitoring is conducted using a Hudson air sampler (20 liters per minute) using a Whatman 41 filter paper. Operational breathing samples, process air samples and general air samples were taken by the Safety Engineer. The period between surveys range from 6 to 8 months. All new operations or changes in operations are air sampled for contamination immediately upon initiation of such operations.

Results of air samples taken show general plant air concentrations to average between 25 and 75 $\mu\text{Ci}/\text{m}^3$. A singular operational air sample taken during the weighing of pellets for EEL job - (pellets contaminated) was found to be as high as 7400 $\mu\text{Ci}/\text{m}^3$ of air. This operation was of 2 minutes duration. Other samples taken of the same operation ranged from 277 and 6540 $\mu\text{Ci}/\text{m}^3$. After improvement of the weighing operation, air samples were 115 and 172 $\mu\text{Ci}/\text{m}^3$.

3. Stack Effluents

Stack effluent is monitored approximately every 6 months, according to file, using isotachic scanning techniques. Stack effluent concentrations are reported to be less than 70 $\mu\text{Ci}/\text{m}^3$.

4. Roofs

Roof samples are taken using a Whatman 41 filter paper over a 100 square centimeter. Roof samples are taken on all incoming and outgoing shipments and in the general process areas. Results of incoming shipments ranged between 30 to 100 $\mu\text{Ci}/\text{m}^2$. Results on outgoing shipments were less than 20 $\mu\text{Ci}/\text{m}^2$. Highest roof found in the building of the general process area was 500 $\mu\text{Ci}/\text{m}^2$, the average of a 11 spots taken was only 60.

5. Liquid Effluent Monitoring

All liquid wastes are monitored prior to release of the liquid into the sewerage system. In order to check, all wastes containing in excess of .50 grams uranium per liter were not released, but were filtered. The filters were collected and kept as scrap accountability. Records of waste waters released to the septic system indicate levels of 4,025 grams U/liter of water to be the highest amount measured to date. Records of analysis of wash wastes (contaminated clothing) show release of from 0.125 gms/l to 0.96 gms/l . In Plant B, he stated all chemical and cleaning solutions are evaporated to dryness and material collected and stored as scrap.

6. Field Surveys

According to file, smear samples were taken outside the commercial fuel plant. Results of these smears show an average of 50 $\mu\text{Ci}/\text{m}^2$ with a low of 1 and a high of 250 $\mu\text{Ci}/\text{m}^2$. Hele stated soil samples had been taken outside the plant facilities, but results of the analysis were not yet available.

7. Records

Records of personnel monitoring, direct radiation and air borne contamination are maintained as are records of waste

disposal.

Physical examination records (including blood and bio-assay samples) are maintained.

License SM-141

The licensee used facilities at their Bayside, Long Island plant to fabricate two pellets of 2g gas total U for General Atomics, San Diego, California. The work was started on February 5, 1958 and completed in April 1958. A total of 10 gas total UO_2 (containing 8.7 gas U - 8.15 gas of U^{235}) was procured for this operation from Millinckrodt Chemical Company.

The powder metallurgy techniques which involved compacting of enriched UO_2 and zirconium hydride, according to Dr. Zambrow was performed inside a ventilated hood. The operations involved were:

1. 2.5 gas of enriched UO_2 and approximately 20 gas of ZrH_2 mixed in a vial.
2. The powder mixture is loaded into a die.
3. The die is heated in an hydrogen atmosphere at $600^\circ C$ and hot pressed. The resultant compact was $3/8"$ in diameter by $2"$ long.
4. The compact was then cut into two pieces $1/4" \times .9"$ long by dry machining inside a hood.

Accountability records maintained by Mr. Donohue, showed transfers of compact to General Atomics of 3.6 gas U and 3.3 gas as enriched U^{235} . 5.13 gas total U is presently in storage in the accountability safe inside a 1 gallon container. Mr. Donohue stated that a letter had been sent to General Atomics requesting shipping instruction for the scrap material.

Dr. Zambrow stated that the procedures outlined in their license application Rocket No. 70-107 dated November 15, 1957 was followed.

Radiological health safety was performed by Mr. Grieb. The radiation monitoring procedures are the same as reported under SM-82.

B X HIBIT "A"

SYLCOR

SYLVANIA-CORNING
NUCLEAR CORP.

BAYSIDE, NEW YORK

TELEPHONE
FACULTY 1-1212

June 24, 1958

Mr. Paul Klevin
U. S. Atomic Energy Commission
New York Operations Office
70 Columbus Avenue
New York 23, New York

Dear Mr. Klevin:

I want to let you know that since your visit to our plant two weeks ago we have added to our company staff a physicist, Mr. Sheldon Strauss, who will, among other things, review our production procedures from the criticality standpoint. Mr. Strauss is a Reactor Engineer who has had extensive experience in performing reactor physics calculations, including those pertaining to criticality. He is also experienced in health physics and in the handling of radioactive isotopes, including the performing of shielding calculations. Mr. Strauss has a B.S. Degree from the College of the City of New York and a M.S. from New York University. He attended the Oak Ridge School of Reactor Technology in 1954 - 1955.

We feel that Mr. Strauss will be valuable in establishing the criticality limits which we will request from time to time in license applications and amendments, and also in establishing and helping us maintain our own procedures for assuring adherence to these limits. At the time of our meeting at Hicksville we were still negotiating with Mr. Strauss and, therefore, did not feel it advisable to discuss the possibility of his being added to our staff, but I felt that you would now be interested to know that one of your informal recommendations had already been put into effect.

Incidentally, I want to let you know how sincerely we appreciate the advise and comments that you and Bob Engalken gave us at the time of your inspection. We feel that your suggestions were extremely well taken and will be very helpful to us in living up to the requirements of our license, as well as improving on the license in future applications.

Very truly yours,

SYLVANIA-CORNING NUCLEAR CORPORATION

Garth W. Edwards

Garth W. Edwards
Controller

GWE:AMM:cm

cc: Mr. R. Engalken - AEC, San Francisco

USNRC 000467

E-25-58

Dr. Morris Kleinfeld, Director
 Division of Industrial Hygiene
 Att: Dr. Robert Katz
 Mr. Jack Baliff, Chief, Engineering Section

Div. of Ind. Hyg.
 New York City

June 11, 1959

Sylvania Corning Nuclear Corp.
 Cantlague Road
 Hicksville, New York

Date visited: February 27, 1959
 April 21, 1959

Visited by: Mr. Irving Kingsdäy, Ind. Hyg. Engineer
 Mr. W. Harris, Chief, Industrial Hygiene
 and Radiation Section, U.S.A.E.C., N.Y.
 Operations office.

Persons interviewed: Mr. Henry Grieb, Radiation Safety Supv.
 Mr. R. Andree, " " office

Purpose of visit: Survey plant for compliance with rules
 of Code Bulletin No. 38

Origin: Request from Medical Section

In accordance with a request from the Medical Section, the above plant was visited to determine whether it was in compliance with the rules of Code Bulletin No. 38. The long time period between the time of request and visit was due to difficulties in obtaining security clearance and coordinating the activities of the various personnel involved to arrange a mutually satisfactory time of visit as well as to illness, vacation schedules and shutdown of the plant for several months. The actual plant survey was made during the first visit. The second visit was made for the purpose of examining the company's air sampling and film badge records.

REPORT

There are two separate reactor fuel element manufacturing facilities at this location. The commercial plant makes many different kinds of fuel elements for different reactors. Natural, enriched, and depleted uranium are handled. About 250 people are employed on these operations on a three-shift, 7-day basis.

A separate building is used to prepare fuel for an Atomic Energy Commission plant using raw natural uranium. These operations have been reduced to some extent recently and there are about 130 people employed here on a 1-shift, 5-day per week basis.

Description of Operations

Commercial Plant

The sequence of operations is as follows: The uranium-aluminum

Sylvania Corning Nuclear Corp. (continued)
E-25-58

June 11, 1959

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materials to be alloyed are weighed out in the accountability area and toted to the furnace room where they are melted at 960°C in a vacuum furnace exhausted by lateral hoods at top and bottom. The molds are poured in place beneath the furnace and the ingots removed from the molds in a ventilated hood located adjacent to the furnace. The ingots are heated, rolled in a mill exhausted by a canopy hood and sheared. Plugs are then punched out of the sheared pieces. These cores are placed in spaces which have been provided in aluminum plates called picture frames. There are two cores per plate. The plates are then hot-rolled to reduce their width by 50% and increase their length by 200%. They are sheared in half, faced on both sides with aluminum plate, tack welded on the sides and hot-rolled to a predetermined thickness. Then fluoroscopy is performed to determine the core length and its position. After another cold rolling operation, the plates are fluoroscoped again so that they can be centerpunched for the last shearing process. Finally, the plates are assembled into the elements and are inspected.

All these operations are performed in several rooms in either buildings #2 or #9. About 4 to 5 melts are prepared every 24 hours. The maximum weight percent of uranium in the alloy is about 40%. The average is about 8% to 12%. Due to criticality considerations, no more than two kilograms of U-235 (enriched) would be melted at one time and two ingots could be made from this. The maximum weight of any alloyed batch would be about 80 lbs.

Powdered compacts are also made in the same building containing the vacuum furnace (building #2). Mixtures of uranium oxide and stainless steel powders are weighed, blended and pressed. Weighing and pressing are done in ventilated dry boxes. The compacts are put in a bag for transport, sintered in an exhausted furnace, stamped and fitted into plates. Stainless steel plates are placed on either side and welded around the edges. The sandwich is heated in a hydrogen atmosphere furnace, rolled, sheared and then handled in a manner similar to that previously described. These operations are also performed in buildings #2 and #9. The production welding in building #9 involves the halfarc process and is unventilated.

A.E.C. Plant

This is building #1 and involves the pressure bonding of uranium in aluminum cans. Due to security reasons, a detailed description of the operations will not be given. Included, however, are nitric acid and caustic cleaning, nickel plating, molybdenum sulfide spraying, heat and pressure bonding, aluminum trimming and wire brushing and cleaning of die parts.

Sylvania Corning Nuclear Corp. (continued)
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Building #21

Production machining is done here. Lathes, grinders, cut-off wheels, etc. are provided for operations on normal bare uranium. The machinery is run wet.

Burning Building #5

This is a separate building used to burn scrap, uranium pellets and contaminated waste. Burning is done in trays set in enclosed transit hoods provided with slots in the front for raking the material. The burned residue is subsequently dumped from the trays into drums resting on the floor of the enclosure. Burning is now done about once a week.

Ventilation and Measurements

Commercial Plant

Building #2

The powdered compact dry boxes, vacuum furnace and ingot hood are exhausted in one system. A filter box located on the roof and containing AAF Deep Bed Filters is used as the dust collector. Velocities of 200 fpm were found in the openings of the hood containing the press and 300 to 400 fpm through the air lock opening in the weigh hood. Compacts were not being made at this time. The vacuum furnace was also not in operation as changes in its construction and ventilation were in progress. About 400 fpm was measured at the edge of the canopy hood over the rolling mill.

Building #9

The sintering furnace exhaust system also includes an AAF Deep Bed Filter unit as a dust collector.

Other exhaust systems are provided for several additional operations not previously mentioned which are performed during the forming and finishing of the elements. These are as follows:

1. Spraying a sodium silicate bonding material. This is done in a booth on a table. The average velocity through the opening was about 75 fpm. The space from the floor to the table top was open, short circuiting air. Baffles were not provided.
2. Degreasing - This is done in an electrically heated perchlorethylene vapor degreaser measuring 38" x 48" and having a freeboard of 17". Cooling coils are provided, as is one thermostat at the level of the coils. A hoist is provided but hand operation is practised. Standard

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ventilation by lateral slots on the two long sides is provided. The ventilation rate was about 20 cfm per sq. ft.

3. Cleaning in hot water, alkali, acid. There are 8 small tanks on a stand in an enclosing hood having an average face velocity of 50 fpm.
4. Removal of heat from an electrically heated aluminum brazing furnace in the assembly room. The canopy hood provided at this oven was ventilated to maintain an inward velocity at its edge of 100 to 150 fpm.
5. An electrostatic precipitator collection system is provided for a centerless grinder, lathe, cut-off machine and rod straightener in the north east corner of the room.

In addition there are 2 hoods in the laboratory where accountability control analyses, scrap reprocessing, ingot sample testing, etc. are performed. Face velocities of 25 to 50 fpm were found.

A.E.C. Plant]

1. Two booths are provided for the spraying of a water-base solution of molybdenum disulfide. Average velocity through the booths was 75 to 100 fpm.
2. Aluminum trimming and wire brush cleaning of the dies are exhausted in one system. Velocities of 150 to 400 fpm were measured in the hood openings. These operations do not give rise to uranium dust. A general air inlet from an office and an exhaust line from a vacuum pump are also included in this system. A dust collector is not provided. Rectangular piping is used, and the branch pipe from the die cleaning machine enters directly into the main pipe at its end.
3. Cleaning tanks are exhausted by rear slots with tapered connections and 50 to 100 fpm was measured at the tank edge.

Building #21]

Two exhaust systems including filter boxes with AAF Deep Bed Filters are provided for the production machines. Some machines have enclosing hoods and some are exhausted by open end pipes. None of these machines were in operation and tests were not made.

Burning Building

About 300 to 400 fpm was measured in the hood slots.

Two deep mat filter units are provided for collecting the dust released during this operation. These filter boxes and the others are equipped with manometers to measure the pressure drop across the units. The fans are on the clean sides of the filters. The units are inspected and

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filters changed monthly, being sprayed with varnish for dust suppression before removal. The used filters are drummed and shipped for disposal.

Air Tests

Air tests were taken at those operations in progress at the time of the visit. All results indicated concentrations comparable to the normal background. The locations were as follows:

1. Rolling mill in building #2 - breathing zone - hot rolling clad, sheared plates containing 18% U.235.
2. Rolling mill in building #2 - breathing zone - hot rolling clad, sheared plates containing 18% U.235.
3. In accountability vault - bldg. #9 - general air.
4. Rolling mill in building #9 - breathing zone - hot rolling clad, powdered cores
5. Rolling mill in building #9 - breathing zone - hot rolling clad, powdered cores
6. Shearing two plates building #9 - breathing zone - plates contain 2 gms. of uranium
7. Storage room building #1 - general air

The company has extensive records of air samples taken throughout the plants, dating back many years. All new operations are surveyed and a complete air sample survey is made at least every six months. Of the samples taken this year, results exceeding the maximum permissible level of about 100 disintegrations per minute per cubic meter of air, were found while weighing and compacting uranium oxide powder and at a turning machine, used to cut rods to size. In the first case, the company claims to have eliminated the problem by redesigning the hoods, and in the second instance indicated that the amount of time actually spent at the operation was too small to classify it as hazardous. The velocities obtained at the powder weighing and compacting hoods should be adequate to control the hazard.

Individual time weighted average calculations are not made because the company feels it is unnecessary.

Outdoor monitoring is done. Thus far the results have indicated concentrations low enough not to be considered a problem.

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External Radiation

Radiation measurements were made with a Juno meter in buildings #1, #2 and #9. The highest reading recorded was 50 mr/hr above a box of normal uranium blanks in the storage room of the A.E.C. building. This is mostly beta radiation and the intensity falls off so that a measurement about 3 feet above the box indicated a rate of 1/4 mr/hr.

Employees who may be in contact with uranium wear film badges which are checked weekly. This year's records indicate that in only one week for one person did the combined beta, gamma readings exceed 300 mrem. In this case the total was 325 mrem (285 mr beta). This man works in the plating area of the A.E.C. plant where close contact with the material is necessary.

Weekly radiation surveys are conducted by the plant's health and safety officer, including the taking of swipe samples. Decontamination methods are recommended as needed.

Accountability & Criticality

Commercial Plant - Buildings #2 and #9

Due to the expense of the materials and the fact that an accidental chain reaction may occur with uranium under certain conditions of enrichment, concentration, density, quantity, geometry, etc., extreme care is exercised in the handling, storage and processing of the materials and elements. One man per shift is in charge of the accountability vault in building #9. This involves checking the weight of incoming materials, the batch products, ingots and melt products. Extreme caution is exercised to insure that critical masses of material are not brought into the same processing area. Processed material in various stages of completion is also stored in racks separated so as to prevent interaction of fissionable materials. Raw material is kept in bird cages which insure that fissionable material can never be closer than about 2 feet from the next storage package.

Only non-critical quantities of finished material are allowed in the inspection room. About 10 stations having yellow lines painted on the floor outlining their boundaries are provided. Material cannot be moved beyond these confines.

A.E.C. Plant

There is no criticality problem here because the quantity of natural uranium needed to start and sustain a chain reaction greatly exceeds the amounts of uranium in the plant.

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Medical

A physician is in the plant twice a day. Pre-employment examinations are given and routine physical examinations are conducted every 12 to 18 months. Urine samples are taken at new job locations, when a fire occurs, or when an air sample indicates high results.

Personal Hygiene

The company supplies the workers with pants, gloves, shirts, lab coats and plastic aprons at least twice a week. Shoe coverings are required for entry into some areas. Laundry is handled twice a week by a commercial laundry out of state. Lockers and showers are provided although there are no one way exits. Respirators are not required for any operations presently performed. There are gas masks, dust respirators, and air supplied respirators on hand for emergencies.

Pyrophoricity

Chips, trimmings, etc. from machining operations are allowed to accumulate in the building to the extent of filling $3/4$ of a 5 gallon can. Thereafter they are stored in covered 30 gallon cans outside the building before being burned in the burning building. No quantity of scrap can be stored in the building overnight. The material is stored as it is formed in the operation, coated with coolant. The company reports no uranium fires in the past two years. Aerial dry powder and G-1 powder are used in the machining area as a fire extinguisher. CO_2 , soda-acid, foam and water are also available.

Porter service is provided. Mostly wet swabbing is done and very seldom is vacuuming performed. Sweeping is not used. Adequate labeling of equipment, areas, etc. with radiation signs was noted.

Discussion

A.E.C. Plant

The dust hazard associated with this plant appears to be minimal because the raw uranium is plated almost immediately at the start of the operation and before that is handled as a massive cold piece.

Although the exhaust system for the aluminum trimming and die wire brushing operations is improperly designed, there does not appear to be any hazard associated with these operations so that the existing installation will probably be satisfactory.

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Commercial Plant

This plant is essentially a job and development shop, processing many different types of articles. All manufacturing operations are not in progress every day. The criticality problem also limits the extent of the operations. It would thus be extremely difficult and time-consuming to make a complete survey at these premises. Furthermore, the nature and location of the operations appear to be in a constant state of flux, also hindering a proper health evaluation. Therefore, since they appear to have been obtained properly, it is felt that the company's air sampling records can be used as an indication of conditions. Although these records show, in general, favorable results, many readings are not strictly applicable in determining the present situation since they are old and were taken at different locations and under different conditions than exist today. However, although recent air samples at all the potentially hazardous operations had not been taken at this time, it is likely that where local ventilation is provided the present control is as good as, if not better than, that previously recorded. This applies as well to other areas besides the commercial building. In addition, observations and the limited air tests made indicate that many operations do not release uranium dust to the air because they are performed after the metal has been clad.

There are certain uncontrolled operations, however, such as weighing in the accountability area (2 yr. old records indicate extremely high dust concentrations while weighing U-235 pellets), hot rolling of unclad material in building #9 and the shearing and punching of unclad material which tend to give rise to airborne contamination. Although corroborative air tests could not be made, it would appear that on the basis of observations, reports in the literature, and knowledge of the operations excessive dust concentrations could be obtained. Despite the company's claim that these operations have been checked carefully to insure no loss of material and excessive airborne contamination, and although hot rolling is done with a lubricant to coat the uranium and prevent excessive oxidation, it is felt that, without ventilation, incidents may occur resulting in massive exposures to the workers.

The degreaser, sodium silicate bonding spray booth, and laboratory hoods in building #9 are not operating in accordance with good engineering practices or New York State Code Rule requirements.

The performance of welding, particularly heliarc welding in building #9 with its potential generation of excessive quantities of ozone may also tend to injure the workers' health.

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General

The filter box dust collectors provided for many of the operations are not deemed too desirable. The workers may be exposed to excessive dust concentrations while changing filters, despite the spraying which is done, and excessive build-up of dust on the filters can cause reduced air flow at the hoods with subsequent worker exposure.

External Radiation

The external radiation hazard appears to be quite slight. For all practical purposes, this hazard is due primarily to beta particles. The alpha emissions will not penetrate the outer layer of skin and the amount of gamma radiation is negligible. The beta radiation is kept under control by the practice of having the employees handling the uranium wear leather palm gloves. Therefore, the film badge readings, which this year showed only one weekly exposure slightly in excess of 300 mr. may not be completely indicative of the actual personnel exposure because of the protection offered by the gloves and other clothing. A weekly permissible dose rate of 600 mrem may also be considered to be applicable in this instance since Code 38 permits this rate in the skin for employees whose entire body or major portion thereof is exposed to radiation from external sources.

CONCLUSIONS

The plants appear to be operating in substantial compliance with Code Bulletin No. 38 and in general to be providing proper facilities and trained personnel for the detection and control of contaminants and external radiation present in quantities which would tend to injure the workers' health. However, as a safety factor, to prevent any potential massive internal exposure to radioactive materials as well as to forestall any unsafe future condition caused by the operation of the more standard equipment, it is felt that additional control or modification of existing conditions as indicated below is necessary.

RECOMMENDATIONS

1. Local exhaust ventilation should be provided for
 - a) weighing operations in the accountability section,
 - b) hot rolling of unclad material in building #9, and
 - c) shearing and punching operations on unclad materials.

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2. The filter box dust collectors should be replaced by continuous cleaning cloth arrestors or other suitable types which can be cleaned externally and which have constant pressure drops so that uniform air flow at the hoods will be maintained. This type of collector should also be used in all future installations.
3. Local exhaust ventilation should be provided for production welding in building #9. Local hoods as indicated on engineering plate #166 exhausted to maintain at least 100 fpm at the arc can probably be used.
4. The degreaser ventilation rate should be increased to maintain at least 60 cfm per square foot of tank area.
 - a) A thermostat should be provided in the liquid zone connected to control or shut off the source of heat when the contents reach a temperature not higher than 20°F in excess of the boiling point of the uncontaminated solvent.
 - b) If not already regulated, the hoist speed should be set not to exceed 11 feet per minute.
5. The space between the floor and table top in the sodium silicate bonding hood should be covered and baffles provided in the hood.
6. The ventilation rate in the laboratory hoods should be increased to maintain at least 100 fpm through the open areas. If not already provided, adequate filters should be installed for cleaning the air before it is discharged to the out of doors.
7. Letter of recommendations to company.

Irving Kingsley
Sr. Industrial Hygiene Engineer

Jack Baliff, P.E.
Chief, Engineering Section

JB:fh
IX

REF. 70-97

"APPENDIX"
to

APPLICATION FOR RENEWAL
of

SYLCOR'S SNM - 82

SPECIAL NUCLEAR MATERIALS LICENSE

2/15/63

To retain conciseness and clarity this appendix was prepared to supply the additional information requested in Donald A. Nussbaumer's letter (Docket 70-97 LAE-JJL) of December 26, 1962.

Sylcor drawings E-30125, D-32242 and D-32665 are hereby returned because they appear a necessary part of license application. Further, Sylcor does consider these drawings proprietary and therefore, must request they be withheld from public inspection.

Item I - Quantity of U₂₃₅ to be possessed.

During 1962 Sylcor possessed a varying amount of U₂₃₅. The amount of U₂₃₅ possessed during 1962 varied from a minimum quantity of 464 kgs. to a maximum quantity of 730 kgs. with an average quantity of 583 kgs. of U₂₃₅.

It is anticipated the volume of U₂₃₅ required to carry out Sylcor's contracts will increase to 900 kgs. by January, 1965.

Specifically, the uranium will be in the following forms:

- Virgin U metal or oxide
- Alloy or cermet, clad plates
- Loaded tubes
- Semi or completed elements
- Scrap awaiting shipment for reprocessing.

Item II - References to Mr. D. A. Nussbaumer's letter of 8/15/62 are numbered, as in his letter, below:

Sub-Item 1 - Detailed drawings of Sylcor's process equipment and its location are proprietary. Included in figure 3 is a process flow diagram showing SNM and other material's flow from and to various areas. These areas include receiving, storage, accountability, process steps, Quality Control and shipping.

A comprehensive Health-Safety Program is rigidly administered by professional medical department and safety director. The program includes air monitoring both inside and outside the plant.

Vigorous action is immediately instituted when any evidence of air contamination or air-borne contamination is encountered. A series of counter check techniques assures complete air control.

Sylcor's Health Program is under the surveillance of the New York Operations Office of the U. S. A. E. C., and the New York State Division of Industrial Hygiene.

Sub-Item 2 - Semi annual monitoring is conducted in all areas where radioactive materials are processed. In addition, sampling of all areas is done on a quarterly basis. During the last survey, samples ranged from 0 to 1.0×10^{-11} uc/ml. Prior samples ranged from 3.6×10^{-13} uc/ml to 2.82×10^{-12} uc/ml.

Sample duration is dependent upon the duration of the operation being surveyed. For example, the pressing of compacts—three compacts may be made at one time. The entire operation may take five (5) minutes, therefore, only one five minute sample may be taken. Melting operations are sampled for durations between 30 minutes to 90 minutes. The number of samples taken on each operation during a survey varies between 1 to 4.

As indicated in Item 2 (para. 1 above), general air samples are taken semi-annually in areas where radioactive material is processed and air samples taken quarterly. In addition to these surveys, breathing zone samples are taken in the following operations.

1. Melting
2. Weighing
3. Sintering
4. Pressing

These operations are surveyed between four to six times per year. Compliance with 10 CFR Part 20 requirements pertaining to release to unrestricted areas is determined by quarterly surveys at point of discharge for ventilation systems referred to in Item 1 above. Historically, samples have indicated activity in the range of, 1.7×10^{-13} uc/ml to 1.4×10^{-12} uc/ml. Property perimeter samples are taken for backup data only for our own information. The quarterly sampling is for Part 20 compliance.

When routine surveys or an accident requires decontamination, a solution of Wedac (a product of West Disinfectant Company) is used to scrub and wash the area. The waste waters are filtered and the filters are turned over to the accountability department. Sylcor's general housekeeping and control of contamination materials precludes the need for a routine decontamination program.

Smear tests are taken on a scheduled routine basis by Sylcor's Health-Safety Department. Reports of these surveys are reviewed by management on a weekly basis and action, if indicated from these surveys, is taken immediately.

Sub-Item 5 - The fluids from decontaminating are filtered. The filters are turned over to accountability. If analysis show insufficient uranium for recovery they are then sent to ORNL for burial.

Sylcor's liquid effluents, except for sanitary sewers, flow into a sump pond immediately behind Building 4. Samples of sump water are taken and the analytical results reported to management. The monthly samples of sump water historically range from 0 to 3×10^{-6} uc/ml. Consequently, Sylcor cannot contaminate any public sewers.

Sub-Item 6 - Surface contamination is determined by using an Eberline Gas Proportional PAC 3G instrument. An area about 1 square foot is wiped with a dry paper towel and then the area read with the survey instrument. This reading is considered as fixed contamination. The maximum permissible fixed contamination levels are:

2000 counts/minute for restricted areas.

1000 counts/minute for unrestricted areas.

Item III - (Reference Mr. D. A. Nussbaumer's letter of 12/20/62)

See also, Figure 1 in Renewal application and Figure 3 and overlay with this appendix.

As described in Renewal Application, Buildings 2, 4, 10 and 12 serve various functions, integral with nuclear fuel fabrication. Below is a detailed description of each buildings use.

Building 2 - One room in this building is used for melting of boron containing U/Al. alloy. The purpose of a separate melting area is to maintain rigid boron contamination control. Maximum U₂₃₅ on-site in this melting room is 20 kgs. U₂₃₅.

Building 10 - Used for storage only and is described in Renewal Application under III - 4d (page III D4). Maximum quantity of U₂₃₅ stored in Bldg. 10, 350 kgs. U₂₃₅.

Building 12 - Sylcor's isostatic pressing building. There is no storage of U₂₃₅ in this building. Only the U₂₃₅ necessary for immediate processing is kept in this building. The maximum quantity of U₂₃₅ in Bldg. 12 at one time will be 10 kgs.

Building 4 - The majority of Sylcor's fuel fabrication work is carried out in Bldg. 4. See Figure 3 attached to this Appendix, for process areas and flow of work indication. Building 4 also contains the accountability storage vault. (See renewal, Para. III D-4). Maximum quantity of U₂₃₅ contained in Bldg. 4 will be 700 kgs. of U₂₃₅.

Item IV - See Sylcor's "Emergency Procedure Manual", attached.

Item V - Geometric to Limit Control Procedure.

Being aware of the potential hazard involved when uranium is transferred from geometric control, the following procedures are rigidly enforced.

- a. Only one trained member of the staff, at any one time, is allowed to transfer fissionable material from geometric to mass-limit control configuration.
- b. The single man, at any time, removes from a geometric control container only that amount of fissionable material permitted under Paragraph III B-1 of "Renewal Application" and transfers it to proper Sylcor internal container. This single container is then stored in a storage rack described under III C-4. He then returns and loads the second Sylcor internal containers. No more than one internal container is allowed at the transfer station at any one time.

Item VI - Refer to application, Section III C-8b "Melting" statement

"In order to assure an always safe condition, the crucible size will be limited to the following maximum dimensions; 6 inch inside diameter and 16 inches high. These crucible dimensions assure an always safe geometry even when optimum moderated and fully reflected".

The integral critical mass studies of Beck, Callihan, et al (1) with 93.4% U_{235} - water solution indicate that critical conditions for a reactor core in aluminum vessel of 6 inch diameter with water reflector requires a minimum crucible height of 27.9 inches. The associated critical mass is 5.93 kg. U_{235} . The mass limit for the melting operation as specified in Appendix "A" is 2.0 kg. Hence both the crucible height and mass limit prevent criticality even assuming optimum moderation and full water reflection.

The above conclusion is also reinforced by the guide to shipment edited by Henry (2), which gives a permissible cylindrical container shape of 6 inches in diameter and 17.6 inches high for U_{235} water solutions. We believe that this experimental evidence confirms our statement quoted above and in addition, the mass limits prevent even a second contingency error from being a hazard (e. g., double batching).

(1) ANL-5800, Section 3.9.1, pp 246-247; original reference K-343, Part III (1949).

- (2) TID-7019, Table IV, p. 15
(See Figure 3 attached to this appendix.)

Item VII - Long term in process and scrap storage.

Sylcor abides by the corporate and fire-underwriters rulings to minimize if not eliminate all flammable materials in all process operations. No flammable or pyrophoric material is stored in fissionable material storage areas. The stored U is not in pyrophoric form because of size of pieces. Details on the building materials are given in the Renewal Application under paragraph III-D.

Further, on page III-D-1, it is stated that each storage unit will contain "no more than the U₂₃₅ specified for the 'Maximum Control Batch - Appendix A' for the specified type of material." With the exception of the item "unalloyed uranium metal (< 89% U₂₃₅, < 50 g/piece), "all the material is specified at less than 2 kg. U₂₃₅. In accordance with Table IV, page 26, TID-7016, Rev. 1, it can be seen that with this limit there is no H/U₂₃₅ requirement which must be met. The unalloyed uranium by virtue of its specifications would have an H/U₂₃₅ ratio of approximately 1.5 at a probable 50% void fraction. In accordance with this same table, a 5.2 kg. unit is permitted up to a H/U₂₃₅ ratio of 5 which would require about a 80% void fraction which is considered to be impossible for this type of material.

As Appendix "A" covers all materials handled in the plant, there is no particular additional specification for the storage facilities.

From a criticality safety standpoint, as stated in the application, all of the storage units listed in Section III D-3 and 4 conform to Figure 24 or Table V of the TID-7016 reference. The following description and dimensional data will substantiate the numbers we have specified in the license application.

Item VIII - The shipping container is the standard 20 inch birdcage frame and container of Union Carbide Nuclear Company design described in TID-7019 (1). The physical form of material to be shipped are as specified in application--uranium metal or uranium oxide in solid or powder form. The loading limitations and container spacing (array stated in application (not more than 10 kg. each, maximum of 30 kg. per shipment) is within the specifications given in Section 3.2 and 3.3 of TID-7019(1). The container is a water tight design, and therefore, the recommended (2) 10 kg. mass limit per container is used. The allowable number of maximum size units (3) in a cubic array for the 20 inch birdcage design is about 50, whereas applicant is requesting approval for the equivalent of three units.

- (1) TID-7019 "Guide to Shipment of U₂₃₅ Enriched Uranium Materials", H. F. Henry (1959) p 51.
- (2) TID-7016, Table IV, as recently modified per letter from D. A. Nussbaumer, AEC L&R, dated 12/26/62 to applicant.
- (3) TID-7016, Figure 23.

Item IX - The mass limits established for the Sylvania fuel element shipping containers were gaged on a k_{eff} of 0.90 for the container under conditions of full light-water moderation and reflection.

Calculations to estimate the criticality of the containers were done using the two group formula for a homogeneous, equivalent bare reactor, i. e.

$$k_{eff} = \frac{\eta f \beta}{(1 + \tau B^2) (1 + L^2 B^2)}$$

In order to check the accuracy of the calculations, the same method was used to evaluate the criticality of a similar configuration for which experimental data are available. These data are given in A/Conf. 15/P/2376, June 1958(1) for fully enriched, zirconium-light water cores in slab geometry. These cores were all constructed to have one short dimension of the order of 6 to 9 inches. The value of the resonance escape probability "p" was taken as unity since the fuel elements were assumed to contain fully enriched uranium. The value of " η " used was 2.09.

For cases like these and those involved in the Sylvania fuel element shipping containers, where the fast leakage is quite large, it is important to get a good estimate for the neutron age, and in the metal-water mixtures considered, the ages used for the calculations on the experiments and the shipping containers were taken from Figures X and XI respectively, of A/Conf. 8/P/597, June, 1955 (2). $\Sigma_{tr} (H_2O)$ was taken as 2.096. A reflector savings of 7 cm was assumed throughout.

Of the experiments reported, two in particular were checked. The first had critical dimensions of 6" x 31" x 40-1/4" and an experimental k_{eff} of 1.001; our calculations checked within 0.9%. In the second case, a core of the same composition as the first, but, bisected by a sheet of cadmium .020 inch thick, had critical dimensions of 9" x 26" x 40-1/4". This core was checked to find the worth of the cadmium sheet. Our calculations yielded a plate worth of 14.4%, which agreed with that reported.

The cadmium sheet was conservatively assumed to be worth 12% reactivity in the shipping containers. This was established by reducing the effectiveness of the cadmium in proportion to the diffusion lengths of the two cores. The diffusion length chosen as representative of those in the containers was the smallest anticipated. In general, the worth of the cadmium is underestimated on this basis. In addition, the 14.4% value was established for a core 9 inches wide. Since the maximum active width of the core in the shipping coffin will be only 7.5 inches, it is expected that the poison will be more effective in the latter case.

Since the calculations check well with the experiments, and conservative assumptions were made as to the effectiveness of the cadmium sheet, it is felt that the recommended limits may be used with confidence.

- (1) "Theoretical Analysis of Highly Enriched Light Water Moderated Critical Assemblies", M. Goldsmith, R. T. Jones, T. M. Ryan, S. Kaplan and A. D. Voorhis, A/Conf. 15/P/2376, June 1958.
- (2) "Status of Experimental and Theoretical Information on Neutron Slowing Down Distributions in Hydrogenous Media", J. E. Wilkins, Jr., Robert L. Hellers, Paul F. Zweifel, A/Conf. 8/P/597, June 1955.

Item X - Sylcor has a Victoreen radiation alarm system. Its response time is inverse proportion to radiation activity level. For example, the response times are as indicated below:

1 mr/hr	Response time is 10 seconds
10 mr/hr	Response time is 1 second
100 mr/hr	Response time is 0.1 second

Sylcor's operation requires manual transportation of fissionable material from one operation to another. In case of power failure there would be no movement of this material however, an auxiliary power generator does supply current for auxiliary lighting and the operation of the criticality alarm.

SYLVANIA-CORNING NUCLEAR CORP.
Bayside, New York

F. M. Cohen

Bill

Subject: OPERATIONS REPORT - February 29, 1960

Date: March 1, 1960

To: G. W. Edwards
D. B. Metz
S. B. Roboff (absent)
J. L. Zambrow

Also Present:
C. I. Whitman (for S. B. R.)

From: L. L. Davenport

1. Marketing Unit:

Chuck Whitman reported, in S. B. R.'s absence, that three inquiries were received during the week. Ten proposals, amounting to \$660,000, were dispatched. One proposal, to Alco for SSPWR rods, raised some questions. It had been pointed out that extra equipment amounting to \$60,000 might be needed to permit us to fabricate stainless steel clad UO₂ rods for ANL. The question was raised as to whether this same equipment, or some portion of it, had been included in the price of the bid to Alco. G. W. E. is to check this point. No proposals were rejected during the week, and one proposal amounting to \$1,000 was accepted. In addition, Allis-Chalmers has provided us with a letter of authorization to permit us to spend up to \$1,000 for purchase of long procurement items on their Prototype Heater job. We have not as yet proposed on this project.

Two proposals were late -- one to Wright Field was delayed in Marketing and the second to AMF, for which the cost estimate was received on time.

2. PRDC:

G. W. E. reported that the successful bonding of the .395 blanket pins had been brought to a halt during the past week while we await receipt of sleeves from PRDC. Crin Neff is in Philadelphia today (2/29) to pick up 200 sleeves to be incorporated in all pins from this point on. We expect to resume experimental lots with the new sleeves as soon as they are received. We will then be ready for full production if no difficulties are experienced in bonding the sleeves. PRDC reports that there may be a period of as long as four weeks before additional sleeves will be available. It was agreed that we should expedite sleeves, put pressure on PRDC, and otherwise plan to cover production stoppages caused by shortage of sleeves if this interferes with our work.

During the course of the week all pins have been sorted at Hicksville. Approximately 550 pins show ring marks and may have weld defects, but are otherwise finished and accepted by NDT. These pins contain .413 diameter slugs, and will be submitted for approval to Orin Neff. Present indications are that approximately 60% will be accepted. Wire winding has given us some trouble, and work was stopped when it was noted that almost 50% of wound pins were rejectable. The equipment has now been reworked, and wire winding will commence again on a limited scale to check out the equipment.

Identification of slugs has now been corrected. It is possible that one assembled element will have been completed by Wednesday at the time of the Sylcor Board Meeting.

3. Commercial Production:

G. W. E. reported that 129 elements had been manufactured and inspected in February. These included 34 for University of Michigan; 56 NASA standard; 11 NASA control; 28 APPR 1A elements. Difficulties are still being experienced with 20% materials on the two French orders. Otherwise production is proceeding satisfactorily. March schedules are being laid out, and it is somewhat doubtful that there may be enough elements available for fabrication to fully utilize the present capacity now estimated to be approximately 130 per month.

5. Contract 1293:

The quality index at Hicksville for the past week was +.7 -- at Savannah River the quality index was zero. Fifty hours of lost time was logged during the month in machining, as a result of no backlog of cores. Twelve hours of downtime in canning were credited to the same factor. Our reject rate on cores is still running approximately 40%.

D. B. M. pointed out that the plating machine is now running satisfactorily and is planned to be operating at a level to cover all of our needs on a one-shift basis by March 15. He also pointed out that Savannah River had granted permission for Sylcor to construct welding equipment for end closures on slugs. The welding machine is under construction and will be ready about April 1. Providing our welds are satisfactory, we will begin on that date to weld approximately one-third of our total canning output.

This is a most significant development for Sylcor in that it places final responsibility in our hands for slugs going directly into reactors. A final inspection at Savannah River may be the only operation performed at the site.

5. Beryllium Research:

J. L. Z. pointed out that additional space is needed for beryllium activities. It was planned that the room be enlarged by incorporating the adjacent office space into the beryllium laboratory area. Additional space will be released by the forthcoming move of marketing personnel to the front office section of the building.

LLD:bek

cc: H. M. Cohen

U.S. GOVERNMENT

Memorandum

TO : Robert Lowenstein, Acting Director
 Division of Licensing & Regulation, HQ. DATE: MAY 4 1961

FROM : Robert W. Kirkman, Director
 Compliance Division, NYOO

SUBJECT: TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT- 10 CFR
 40 AND 70

CMP:PBK

Transmitted herewith is the following reinspection report involving noncompliance:

SYLCOR DIVISION
 Sylvania Electric Products, Inc.
 Hicksville, Long Island, New York
 Bayside, Long Island, New York

License Nos.: SNM-82 (10)- 39
 SNM-141
 C-3700

The following items of noncompliance were noted as a result of the inspection:

Part 70

SNM-141

No items of noncompliance.

SNM-82

20.203 "Caution signs, labels, and signals"
 (f) "Containers" (4) - in that several wrapped plates containing enriched uranium and several containers containing incoming raw materials and scrap, each containing in excess of 100 grams of enriched uranium, were not labeled as to the amount of enrichment or the weight. (See paragraph 19 of Part 70 report details.)

Distribution:
 1 - Div. of Comp. HQ.
 1 - Div. of Lic. R.
 2 - Cmp Div. NYOO

Approved by: Robert W. Kirkman, Director
 Compliance Division
 NYOO

MAY 2 1961

This document contains neither recommendations nor conclusions of the National Bureau of Standards. It is the property of the Bureau and is loaned to your organization; it and its contents are not to be distributed outside your organization.

(f) "Containers" (1) and (4) - in that fuel elements which contained 20% enriched uranium and which were stored in four coffins, were not labeled as to the amount and type of material or the radiation caution sign and symbol. (See paragraph 19 of Part 70 report details.)

Parts 70 and 40

SNM-82 and C-3700

20.401 "Records of surveys, radiation monitoring and disposal"

(a) - in that no personnel monitoring records were available other than those pertaining to the last quarter ending December 31, 1960. (See paragraph 18D of Part 70 report details.) (Old Part 20.)

(c) - in that stack effluent and air surveys prior to June 13, 1960 had been recorded in dpm per cubic meter instead of uc/ml. (See paragraph 18F(2) and (3) of Part 70 report details.)

Part 40

C-3700

20.203 "Caution signs, labels, and signals"

(f) "Containers" (4) - in that several containers containing depleted uranium in the form of skull and cross from melting operations were not labeled as to type or amount of material. (See Part 40 report details.)

The above-mentioned items of noncompliance were discussed with D. B. Metz, Manufacturing Manager, Grant LaPier, Plant Manager, Sheldon Strauss, Criticality Engineer, Milton Boll, Accountability Manager, and Henry Grieb, Chief Safety Engineer.

1 - Div. of Emp. Pro.
 1 - Div. of P. L. & R.
 2 - Div. of Emp. Div. NYDO

Approved: *Robert W. Grynham*, Director
 NEW YORK

May 1961

If additional copies of this report are required, they should be ordered from the Contract Administration Office, General Services Administration, Washington, D.C. 20540.

Recurrent items of noncompliance, such as 20.203(f) (1) and (4), labeling of containers, and 20.401(c), old Part 20, records of surveys, were discussed with the group. It was pointed out to Metz that at the time of the inspection, Grieb had already made some progress in correcting some of the deficiencies in labeling and also had begun to convert results of air and stack samples expressed in dpm per cubic meter to uc/ml, as required by the regulations. Grieb noted that the reasons for not being up to date were due to the fact that (1) he had no personnel in his group up until January of this year to relieve him of some of the health physics operations, (2) he not only had to perform health physics inspection, but also had to perform criticality inspections, and (3) he also has to look over the health and safety operations at both Hicksville and Bayside. With regard to the 20.401(a) citation, (personnel records), as noted in the report details, Grieb stated that he had attempted to put all the records on IBM cards, but this operation was curtailed, and at present, his secretary and his assistant are in the process of compiling personnel radiation exposure records of individuals on a form similar to form AEC-5.

Both Metz and LaPier expressed willingness to conform to the Federal Regulations and stated that they wished Grieb to take immediate action to correct all the items of noncompliance.

With regard to nuclear safety, comprehensive and systematic nuclear safety criteria and procedures have been developed by Sylcor during the period since our previous inspection. These procedures are defined in the application for amendment of SNM-82 dated November 25, 1958. They have since been approved by DL&R and have been completely integrated into fuel manufacturing operations at Hicksville. In addition, a full-time criticality engineer has been engaged to establish criticality batch limits, analyze special problems related to nuclear safety and perform calculations necessary in evaluating existing or proposed equipment and procedures.

Distribution:

- 1 - Div. of Comp. Eng.
- 1 - Div. of Lic. & Ins.
- 2 - Div. of Comp. Div., NYOO

Approved by:

ROBERT W. McCLURE, Director

NYOO

May 2, 1961

Throughout the process areas, there is considerable evidence of rigid observance of criticality control procedures. We believe that this is at least partially attributable to the continuous monitoring of operations by the Safety Group. However, the formulation of clearly defined nuclear safety standards and procedures has also been a considerable aid to the manufacturing department in accomplishing their objectives with a maximum degree of safety. In general, we were gratified to note the increased emphasis on nuclear safety evident at Sylcor during the recent inspection. By way of comparison, the apparent safety of current operations at Hicksville compares very favorably with the better-regulated and safety-conscious fuel fabrication facilities we have seen.

No hazard exists and no follow-up inspection will be scheduled. We recommend that a letter be sent to the licensee, D. B. Metz, noting the items of noncompliance and requiring correction.

Enclosure:
1 cy Rpt.

cc: Div of Cmp, HQ.
w/orig. of Rpt.

Distribution		
1 - Div. of Cmp, HQ		Karl H. Klevin - John P. ...
1 - D. B. Metz		Approved by: Robert W. Kirkman, Director
1 - Cmp Div, NYOO		New York
		May 7, 1961

UNITED STATES ATOMIC ENERGY COMMISSION

COMPLIANCE INSPECTION REPORT

Address of licensee GENERAL DIVISION Sylvania Electric Products, Inc., Hicksville, Long Island, New York Bayside, Long Island, New York		2. Date of inspection March 13, 14, 1961
		3. Type of inspection: Reinspection
		4. 10 CFR Part(s) applicable 20 - 40 - 70

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

License No.	Date	Exp. Date
SNM-82	6/9/60	5/31/61

SCOPE: U enriched in the U-235 isotope is limited to that which may be used in accordance with the procedures described in the licensee's applications set forth in Item 8 below. The material may be used for the fabrication of reactor fuel elements and attendant activities in accordance with and limited to the procedures described in the licensee's applications of 11/25 and 12/9-11/58; 1/21, 1/26, 3/2 & 31, 4/21, 24 & 27, 5/2, 6/8, 28, 6/11 & 30, 7/15, 9/30, 10/2, 6 & 30, 11/20/59; 1/19 augmented 2/29, 1/29 augmented 2/10, and 3/29 and 5/2/60.

CONDITIONS: Authorized place of use: The licensee's fuel fabrication plant, Cantique Road, Hicksville, Long Island, New York, at its Bayside, New York laboratory and at the facilities of outside vendors in accordance with the procedures described in the applications set forth in Item 8.

6. Inspection findings (and items of noncompliance) (CONT'D)

Part 70

An inspection of the licensee's facilities under licenses SNM-82 and SNM-141 was made. At the time of the inspection, no work under SNM-141 was in progress. A few operations involving material obtained under SNM-82 were in progress at the Hicksville plant. The inspection consisted of a visual inspection of the plant, discussion of administrative organization, procedures, methods and procedures for prevention of criticality hazards, accountability methods, control, procedures, radiological health and safety, and fire protection, security, and medical programs were reviewed. Records pertaining to inventories, receipts, transfers, waste disposal, medical personnel monitoring, surveys and smears were reviewed.

Part 40

Under license C-3700, no operations were noted to be in progress at both Hicksville and Bayside. Organization and administration, security, and health and safety are the same as reported in the Part 70 report details. Records are (CONT'D)

7. Date of last previous inspection. SNM-82, 141 - 6/9-10/58 C-3700 - 2/17/60	8. Is "Company Confidential" information contained in this report? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> (Specify page(s) and paragraph(s))
---	--

DISTRIBUTION:

1 cv - Div of Cmp. 40	Approved by: Robert W. KIRKMAN, Director NSA (05)
1 cv - D L E R	
2 cvs - Cmp. Div, NYOO	

May 2, 1961

This report is prepared for the Commission by the licensee. It is the property of the Commission and is loaned to you. It and its contents are not to be distributed outside your organization without the express written approval of the Commission.

- 2 -

ITEM 5 (CONT'D)

<u>License No.</u>	<u>Date</u>	<u>Exp. Date</u>
SNM-141	12/1/59	11/30/61

SCOPE: Up to 110 grams of U-235 contained in uranium enriched in the U-235 isotope for fabrication of compacts and for analytical purposes in accordance with the procedures described in the licensee's applications of 11/15/57, 9/12/58, 6/5 and 10/26/59.

CONDITIONS: Non-exceptional.

C-3700	4/28/60	4/30/62
--------	---------	---------

SCOPE: Source material from domestic sources and through the importation from foreign countries, for use in research and development on fuel element manufacture and reprocessing, also in the preparation of fuels, fuel elements, or other forms. This license extends to both Hicksville, NY plant and Bayside, NY laboratory.

CONDITIONS: Non-exceptional.

ITEM 6 (CONT'D)

inventory, receipt, surveys and film badges are maintained as discussed in the Part 70 inspection.

The only items of noncompliance observed or noted during the course of the inspection are as follows:

Part 70SNM-141

No items of noncompliance.

SNM-82

20.203 "Caution signs, labels, and signals"

(f) "Containers" (4) - in that several wrapped plates containing enriched uranium and several containers containing incoming raw materials and scrap, each containing in excess of 100 grams of enriched uranium, were not labeled as to the amount of enrichment or the weight. (See paragraph 19 of Part 70 report details.)

- 3 -

(f) "Containers" (1) and (4) - in that fuel elements which contained 20% enriched uranium and which were stored in four coffins, were not labeled as to the amount and type of material or the radiation caution sign and symbol. (See paragraph 19 of Part 70 report details.)

Parts 70 and 40

SNM-82 and C-3700

20.401 "Records of surveys, radiation monitoring and disposal"

(a) - in that no personnel monitoring records were available other than those pertaining to the last quarter ending December 31, 1960. (See paragraph 18D of Part 70 report details.) (Old Part 20.)

(c) - in that stack effluent and air surveys prior to June 13, 1960 had been recorded in dpm per cubic meter instead of uc/ml. (See paragraph 18F(2) and (3) of Part 70 report details.)

Part 40

C-3700

20.203 "Caution signs, labels, and signals"

(f) "Containers" (4) - in that several containers containing depleted uranium in the form of skull and cross from melting operations were not labeled as to type or amount of material. (See Part 40 report details.)

PART 70 INSPECTION

SYLOR DIVISION
Sylvania Electric Products, Inc.
Hicksville, Long Island, New York
Bayside, Long Island, New York

Dates of Inspection: March 13, 14, 1961 (Announced)

Persons Accompanying Inspectors:

None.

Persons Contacted:

Hicksville

D. B. Metz, Manufacturing Manager in charge of commercial
and contract facilities
Grant LaPier, Plant Manager
Sheldon Strauss, Engineering Specialist, Criticality Engineer
Richard Alto, Production Control
Milton Boll, Accountability Manager
Henry Grieb, Chief Safety Engineer

Bayside

W. J. Donahue, Accountability Representative

DETAILS

9. Introduction

An inspection of the activities related to the use of special nuclear material under License Nos. SNM-82 and SNM-141 was conducted by John R. Sears and Paul B. Klevin of the New York Operations Office at Hicksville, Long Island, New York on March 13 and 14, 1961, and by P. B. Klevin at Bayside, Long Island, New York on March 14, 1961.

Under SNM-82, Sylcor is engaged in the fabrication of fuel elements. The inspection consisted of a visual inspection of the plant, discussion of administrative organization, procedures, methods and procedures for the prevention of criticality hazards, accountability records and control, radiological health and safety and fire protection. Records pertaining to the aforementioned were reviewed.

- 2 -

10. Background Information

An inspection of special nuclear licenses SNM-42 and SNM-141 was conducted on June 9 and 10, 1958. The inspection report was transmitted to Headquarters (Marvin M. Mann) on August 20, 1958. DL&R, in a letter dated September 16, 1958, informed the licensee of the items of noncompliance. (No copy of this letter is available in NY's files.) In a letter dated September 29, 1958, the licensee, (Garth W. Edwards) informed DL&R of the corrective action taken with regard to the items of noncompliance. On November 6, 1958, DL&R acknowledged receipt of the licensee's letter of September 29, and informed the licensee that with the exception of compliance with the conditions of the license regarding film badges, urinalysis and blood counts, it appeared that adequate corrective action had been taken to correct the other items of noncompliance noted in the inspection report. DL&R also informed the licensee that any request for relaxation in their monitoring procedures should include detailed reasons for requesting such relief.

An inspection of the source material license, C-3700, at Sylvania-Corning Nuclear Corporation was conducted on February 17, 1960. The inspection report was transmitted to Headquarters on May 20, 1960, and on May 26, 1960, the report was transmitted by M. M. Mann, Headquarters, to DL&R. On July 22, 1960, a letter was sent by DL&R to the licensee listing the items of noncompliance and requiring corrective action.

On December 8, 1958 a teletype was sent to Headquarters reporting an exposure to one of the licensee's personnel of 7 r beta and 60 mr gamma. On January 20, 1959, this office transmitted to Headquarters a report of investigation regarding the film badge exposure. On March 23, 1959, a memo was transmitted from Headquarters to DL&R concurring with the NY Inspection Division investigation report that the exposure appeared to have resulted from backscattering of a fluoroscope and was inadvertently interpreted as being a beta exposure, and also that no further investigation was required, and the case was closed.

On December 8, 1960, H. Grieb, Sylvania-Corning Nuclear Corporation, informed this office by teletype of a 5.7 r exposure to an employee, D. Newman. On December 17, 1960 the overexposure was investigated by this office, and the report of investigation was transmitted to Headquarters on January 17, 1961. In a memo dated March 6, 1961, the investigation report was transmitted to L. R. Rogers, together with the recommendation for citation, in which Headquarters concurred with the findings of NYOO and suggested that the licensee be cited for the item of noncompliance noted during the investigation.

- 3 -

On January 1, 1961, Grant LaPier, Sylvania commercial plant, informed DL&R that Sylvania-Corning (Sylcor) Nuclear Corporation became a division of Sylvania Electric Products, Inc. and henceforth, it will operate as the Sylcor division of Sylvania.

No further correspondence follows.

All of the details below pertain to Licenses SNM-82, SNM-141 and C-3700, unless otherwise noted.

11. Organization and Administration

On January 1, 1961, Sylcor became a division of Sylvania Electric Products, Inc., which in turn is a subsidiary of General Telephone and Electric Corporation. Mr. Lee Davenport, General Manager of Sylcor, reports to Gerald Moran, who is Vice President of the Chemical Metallurgy Division of Sylvania Electric Products. D. B. Metz stated that since a recent reorganization, his title is that of Manufacturing Manager. Metz is in charge of both the AEC contract plant at Hicksville as well as the commercial facility. Metz reports to Lee Davenport. Metz stated that G. W. LaPier is the Plant Manager of the commercial facility, while he (Metz) acts as Plant Manager of the AEC facility. Metz said the reorganization was primarily due to the necessity of cutting down expenses, such as the services of a controller, legal, etc. He said that the fabrication operation is considered an austere program, and that Hicksville must show a profit or break even in order to stay on in business. He added that the first three months of 1961, January, February and March, have shown a profit for the Hicksville operation.

Exhibits "A", "B", and "C" contain the organizational chart and the mode of reporting through channels. Henry Grieb, Chief Safety Engineer, as noted in Exhibit "A", reports to R. Haffner, Supervisor of Industrial Relations, and thence to L. Davenport, General Manager of Sylcor Division. Dr. John L. Zambrow is the Engineering Manager in charge of the Bayside activity. Under Zambrow, as noted in Exhibit "B", are several groups consisting of the Nuclear Engineering Group, Chemistry & Ceramics, Metallurgy, Powder Metallurgy and Shop divisions. Sheldon Strauss, Engineering Specialist in the Nuclear Engineering Group, reports to Zambrow under the Bayside operations. Strauss also acts as Criticality Engineer for the Hicksville operations. Milton Boll, in charge of Security and Accountability, reports to LaPier and Metz. Richard Alto, in charge of Production Control, reports to Boll.

A total of 69 personnel work in the commercial facility, of which 8 of these personnel are engineers or technicians.

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12. Nuclear SafetyA. General

Fuel fabrication operations throughout the entire plant were observed, storage vaults were inspected, accountability and process records were reviewed and operator and supervisory personnel were interviewed. Spot checks of individual batches in process and in storage were made to determine the degree of enforcement of criticality control procedures.

Sylcor personnel most intimately associated with the establishment and enforcement of criticality control procedures accompanied Compliance Division personnel during the inspection. Included in this group were the following:

Grant LaPier	-	Plant Superintendent
Sheldon Strauss	-	Criticality Engineer
Milton Boli	-	Accountability Manager
Henry Grieb	-	Safety Engineer
Richard Alto	-	Production Engineer

B. Criticality Control Procedures

Criticality control procedures at Sylcor have been standardized to include all types of special nuclear material currently in process. These procedures, though general enough to provide some degree of flexibility in operations, are comprehensive and provide batch limits for all chemical, physical and geometrical forms normally encountered in production. The control system is based predominantly on definite and prescribed mass limitations. However, geometry, concentration and the probability for moderation have been factored into establishing some of these mass limits.

Criticality control procedures, as they were described by Mr. Strauss and as they were observed in practice during the inspection, are summarized below:

- (a) Criticality Limits have been established by the Criticality Engineer, Mr. Strauss. These limits are expressed in terms of grams of contained U-235 permitted at any one operating station at one time. Criticality limits are established on the basis of the type of material under consideration, its physical form and the type of operation performed.
- (b) Operations Stations have been categorized into three basic types: (1) High Limit Stations, (2) Normal Stations, and (3) Soluble Step Stations. This has been done to weight the criticality limits for a particular station according to the probability that the operation presents for achieving moderation, reflection or dissolution of the uranium.

- 5 -

- (c) Criticality Limit Reports are prepared by the Manufacturing Department prior to initiating material flow through the plant on a new job. The primary function of the limit report is to translate the U-235 weight limits established by the Criticality Engineer (Criticality Limits) into numbers of pieces that may be handled at each operating station. The limit report, therefore, indicates sequentially all process setups, the form of the material as it enters and leaves each operation station and the number of pieces permitted at each station.
- (d) Route Cards are prepared by the Accountability Representative from the criticality limit reports. The route cards accompany each batch of material as it flows through process. Route cards indicate allowable batches at each of the operating stations scheduled by the card. Route cards and operating stations (criticality stations) are color coded to aid the operator in differentiating between High Limit Stations (blue), Normal Stations (white), and Soluble Step Stations (red).
- (e) Operations stations throughout the plant are delineated by yellow borders painted on the floors. The identification of operating stations for material control purposes is maintained by signs indicating the number of the station. Color coding on the sign identifies the category of the station. Only one batch of material is permitted within the borders of an operating station at one time. The borders of adjacent operating stations are a minimum of one foot from each other.
- (f) Movement of individual batches of special nuclear material from one operating station to another is done in carrier racks. Carrier racks are fitted with side spacers six inches wide to maintain a minimum spacing of 12 inches between batches if two racks are placed side by side. Carrier racks may be moved to the next station by operators only if the route card accompanying the batch has been validated by accountability.
- (g) In-process storage stations are provided to prevent the accumulation of material at operating stations. Individual batches are stored in the carrier racks used for transporting batches between operating stations. Storage facilities consist of metal cabinets which provide a minimum spacing of one foot between individual batches.

During the inspection tour of the Hicksville fuel fabrication facilities, it was observed that the criticality control procedures for material flow described above were in fact being followed. No deviations from these procedures were observed in the process areas. Batches of

- 6 -

special nuclear material listed on criticality limit reports were found to be in agreement with the criticality limits established by the Criticality Engineer and approved by DL&R as an amendment to License SNM-82. Operating stations were clearly marked by painted yellow lines. In no instance was more than one batch of special nuclear material found within the confines of an operating station. It was also observed that carrier racks were used for the transfer of all batches from one station to another. Route cards accompanied all individual batches of material and in all instances reflected the proper quantity of pieces within the carrier racks. Batches indicated on the route cards also reflected proper batch limits as specified by the validated criticality limit reports and by the criticality limit tables.

In-process storage was also found to be in accord with the established procedure for such storage. Carrier racks were utilized to store batches on shelves of all storage racks and cabinets. Batches in process storage facilities were also spot checked and were found to be in agreement with quantities listed on the route cards accompanying each batch.

Log books in the soluble step stations were examined and found to be detailed and up to date. Results of chemical analyses of etch solutions are recorded in these logs. These analyses indicate that negligible amounts of U-235, in most cases less than one gram, have been found in the caustic and acid batch solutions. Records are also kept of the total number of plates immersed in an etch solution. Solutions are routinely rejected and replaced after a specified number of plates have been etched.

C. Storage Facilities and Procedures

Storage facilities at Hicksville consist of numerous in-process storage cabinets located in the fabrication area, a main vault for raw materials and process material and a large caged storage facility for more permanent storage.

According to the Accountability Representative, general storage procedures require (a) storage in batches consistent with quantities appearing in the criticality limits, and (b) separation of individual batches by a minimum of one foot. Steel racks in the main vault and in the caged storage area are designed to achieve minimal spacing requirements. Some of the wall racks are equipped with continuous shelves which are suitably marked to provide isolated storage areas at least one foot apart.

Spot checks of process materials stored in the main vault and in the caged storage area revealed that individual batches were limited to quantities of contained U-235 consistent with those appearing in the criticality limits (Appendix B of application for amendment to SNM-82 dated November 25, 1958).

- 7 -

D. Miscellany

- (a) A ten channel Victoreen area monitoring system has been installed and is currently in operation at the Hicksville plant. The sensing elements are gamma sensitive and an audible and visual alarm system is actuated at a radiation level of 15 mrem/hr. Warning lights located at each sensing element indicate which sensory bar reached the trip level. Ten read-out meters are located in the security guard shack at the main gate to the plant. These are provided to assist security personnel in coordinating evacuation and emergency procedures in the event of a nuclear incident. Mr. Grieb, Chief Safety Engineer, stated that a complete evacuation of the plant was rehearsed periodically. Emergency procedures were observed to be posted at numerous locations throughout the plant.
- (b) The Superintendent of Production is primarily responsible for the enforcement of criticality control procedures at Sylcor. The Safety Engineer conducts continual independent inspections of overall safety procedures. As part of this independent audit, he determines the degree of enforcement of nuclear safety procedures and reports his findings at weekly staff meetings with management. Mr. Grieb stated that in his inspection tours, he had observed approximately ten violations of criticality control procedures in the past two years. He said that in each instance, he had personally reprimanded the operator and his foreman, and that in at least one instance where an operator had been guilty of a second violation, a letter had been sent to the operator by the plant manager.

13. Facilities and Security

A. SNM-82

A new commercial fabrication plant, approximately 200' x 800' has been constructed on Sylcor, Hicksville property at a location approximately 200' from the contract facility. The two facilities are totally enclosed and separated by wire fencing. The commercial facility contains small rolling mills, extrusion presses, a large machine shop, furnaces, degreasing, acid cleaning, accountability, vault storage, change room facilities and inspection departments, which are involved in the fabrication of fuel elements. Each of the manufacturing areas is set up as operating stations, and yellow paint on floors is employed to mark out each particular operation station or area. Within the commercial facility, there has been constructed a separate area called the control area. This area, which was completely sealed off from the rest of the plant by wall

- 8 -

partitions, contains a change and wash room facility, furnaces, extrusion presses and machine shop equipment. The operations previously performed in this area had been concerned with the fabrication of the PRDC depleted uranium blanket fuel elements. The area is no longer considered a separate control area within the regulated restricted commercial plant. The facilities and equipment within this area are now employed to supplement the facilities located in the rest of the plant. At the time of the inspection, only a few operations involving special nuclear materials were in progress.

B. SNM-141 and C-3700

The facilities at Bayside are located primarily within a caged, guarded wing on the second floor of the building. The facilities include metallurgical, chemical and analytical laboratories. Dry boxes and other enclosures are employed. At the time of inspection at Bayside, no work was being performed. According to Henry Grieb, the program at Bayside is at a standstill. At the time of inspection, the special nuclear material and some licensed source material were stored in a properly posted storage room. Some source materials were also contained within locked cabinets in several of the laboratories located on the second floor. No special nuclear material was stored anywhere but within the storage room. W. J. Donahue, Accountability Representative, is the only one who has a key to the aforementioned locked storage room, which is located on the first floor.

At Hicksville, personnel employed in the work areas are equipped with safety shoes, socks, pants, shirts and plastic aprons. The change areas are complete with both dirty and clean locker areas and showers. A monitor employed in the change area is used by all employees to check for radioactive contamination.

Both the Hicksville and Bayside facilities are enclosed by 6' to 8' steel fences and are patrolled by a security force 24 hours a day. Access to vaults or storage areas in Hicksville is restricted by Boll and Alto. Lock combinations of the accountability vault are available to the aforementioned individuals and plant security. As noted above, W. J. Donahue, Accountability Representative, Bayside, has the only key to the storage room containing source and special nuclear material. This key is also available to plant security.

14. Licensed and Contract Activities

A. Licensed Activities

Both Metz and LaPier reported that the following licensed jobs have been or will be done in the future:

1. Triton (France) 88 fuel elements, 90% enriched
2. Sweden, 225 fuel elements, 90% enriched
3. Belgium BR-2, 40 elements, 90% enriched
4. University of California, 2 elements, 93% enriched
5. University of Maryland, 2 elements, 90% enriched
6. General Atomics, 250 foil plates, 90% enriched
7. Turkey, 35 elements, 90% enriched

The aforementioned jobs were reported to be active, while two jobs, involving fabrication of 53 elements, 90% enriched made for the Dutch, and 40 elements, 20% enriched made for the Portuguese, were reported to be inactive.

B. Contract Activities

Metz stated that Sylcor has a contract to fabricate 1000 fuel elements containing 93% enriched uranium over a one year period for the Phillips Petroleum Company under contract C-225. Sylcor also has a contract to fabricate 500 fuel plates, 93% enriched for Spert IV under contract C-223.

15. Description of Fabrication Operations

According to LaPier and Boll, the following steps are employed in the fabrication of fuel elements:

1. Material is received, identified by a process number, and brought to the incoming vault storage area.
2. Accountability personnel enter the vault to remove raw material in order to make up charges. The charges are made up in the accountability room.
3. The material is then taken to the melt furnace area, and placed in a vacuum induction furnace. Criticality limits for this area are 2 kgs of U-235 per melt.
4. After the material is made into an ingot, it is taken to a heating furnace, heated, and then rolled to the proper dimensions.
5. Punch cores are made, and then the piece is degreased and taken to process storage. In the process storage facility, the cores, the skull, the dross and scrap are placed on shelves which are located on 18" centers.

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6. The cores are then pressed into picture frames, taken to the heating furnace and rolled in a rolling mill. After rolling, the material is then brought back for in-plant storage.
7. Other operations that are then performed on the material consist of cutting off and forming curvatures on the plates, inspection of the plates, acid cleaning, inspection assembly of the element, machining, and welding.
8. Finished elements are checked by Production Control and further inspected both prior and after assembly.

The above operations are basically the same as reported in the initial inspection report.

16. Inventory

The following is an inventory of the licensed, source and station material on hand as of March 3, 1961:

Hicksville - License SNM-82

(Licensed material)

Project No.	Nat. U (g)	U-235 (g)	Name	% of U-235
3001	10817.75	9710.75	Sweden	90
3006	45893.26	9088.13	Pegasse (France)	20
3007	169.03	151.64	Jason (Netherlands)	90
3017	1490.70	1332.64	Saclay (France)	90
3020	1637.98	1468.70	Buffalo	90
3026	4282.04	3999.50	Convair	93
3027	871.95	781.35	Allis Chalmers	90
3034	45.93	42.83	California	93
3044	17565.98	15775.07	Triton (France)	90
3045	1469.38	1369.66	Maryland	93
3105	1313.47	1224.66	General Atomics	93
3804	25.57	23.80	McMasters (Canada)	90
3805	6959.61	6246.66	Dutch	90
3823	1,041,343.88	266,295.91	PRDC (No longer active- storing for PRDC)	25.6
3829	10.95	9.83	BR-2	90
3833	46.13	9.15	Florida	20

<u>Project No.</u>	<u>Nat. U (g)</u>	<u>U-235 (g)</u>	<u>Name</u>	<u>% of U-235</u>
3842	101.24	20.11	France	20
3846	9519.02	8881.62	NASA	93
3902	4.36	4.07	Nucledyne	93
3905	10.04	8.99	Israel	90
3907	22.55	20.34	Curtiss- Wright	90
3909	1214.57	1131.32	Alco Products	93
3910	30948.79	6136.33	Portugal	20
3916	14521.79	13033.98	BR-2	90
3919	2750.15	545.42	Saclay	20
20% stock	4277.55	836.19	---	20
90% stock	35969.54	32318.62	---	90
93% stock	9824.55	9152.71	---	93
Totals	1, 243, 057.76 (g)	389, 619.98 (g)		

Source License C-3700

<u>Project No.</u>	<u>Depleted Uranium</u>	<u>Name</u>
3906	8207.60 (grams)	Alco Products
3823D	16030.69 (lbs.)	PRDC
Depleted stock	67578.00 (grams)	----
4823-01A	509.80 (lbs.)	PRDC
4823-01B	1140.13 (lbs.)	PRDC
Total	17847.62 (lbs.)	

Station Material

<u>Project No.</u>	<u>Nat. U (g)</u>	<u>U-235 (g)</u>	<u>Name</u>	<u>Contract</u>
3021	227.13	211.59	Alco Products	AP-1793
3029	11802.96	10989.50	Phillips	C-223
MTR-ETR "U" Control	189,397.67	176,392.37	"	C-225
3040	16690.63	15544.19	"	"
3041	10332.29	9623.41	"	"
3042	3597.69	3350.60	"	"
3043	2671.35	2488.06	"	"
4845	25856.96	24105.84	Alco Products	AP-1100
3904	11271.90	10500.98	NYOO	AT(30-1)-2370
3837	1812.93	1688.58	Alco Products	AP-1050
	272,667.51 (g)	254,895.12 (g)		

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Depleted Station Material

<u>Project No.</u>	<u>Nat. U</u>	<u>Name</u>	<u>Contract</u>
3837D	6 kgs (Depleted)	Alco Products	AP-1050

Bayside - License SNM-82

There is no material on hand under this license at the Bayside facility.

License SNM-141

Scrap	-	5.13 grams, 93% enriched (General Atomics)
Scrap	-	3.6 grams, 93% enriched (Davison Chemical Co.)

Source License C-3700

<u>Natural Uranium</u>		<u>Thorium</u>	
Engineering	- 103.16 lbs.	Scrap	- 9.00 lbs.
Scrap	97.26 "	Stock	0
Stock	175.18 "		
<hr/>		<hr/>	
Totals	375.60 lbs.		9.00 lbs.

Depleted Uranium - 247.83 lbs.

17. Waste Disposal and TransfersA. Disposal

Under License SNM-82, on July 6, 1960, 150 - 55 gallon drums containing less than 75 mc of U-235, U-238 and natural uranium in the form of contaminated rags with crucibles, filters and firebrick, etc. were transported by truck to Oak Ridge and buried at the Oak Ridge disposal area. On December 16, 1960, 285 drums containing approximately 580 mc of U-235 and U-238 in the form of contaminated wipes and sludge were transported to Oak Ridge by truck and buried at the Oak Ridge disposal site. According to the waste disposal record, the major contaminant was depleted uranium in the form of sludge. The sludge, which was mixed with concrete, is a result of the PRDC operations.

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Under License SNM-141, no waste disposal or transfers were made. Donahue, Accountability Representative, Bayside, reported that a shipment of contract scrap and wastes was sent to the U.S. Ammunition Depot in Earle, New Jersey on 11/29/60. The shipment consisted of 17 - 55 gallon drums containing a total of 5571 pounds of wastes in the form of residues, filters, wipes, etc., which were concreted. Donahue stated that all licensed material had been sent to Hicksville.

B. Transfers

A review of the accountability records showed that scrap shipments of mixed uranium had been sent to Engelhard Industries and Davison Chemical Company during the period from 7/1/59 to 9/19/60. A list of the scrap shipments for recovery and the dates of shipment are listed below:

<u>Date Shipped</u>	<u>To</u>	<u>U</u>	<u>U-235</u>
7/1/59	Engelhard Industries	361.65	337.12
7/1/59	"	1,363.86	1,271.89
7/1/59	"	467.57	421.87
11/18/59	"	630.05	586.99
11/18/59	"	1,283.34	1,195.57
11/25/59	"	549.39	511.79
11/25/59	"	357.53	333.00
7/10/59	Davison Chemical	44,792.95	8,900.36
7/8/60	Engelhard Industries	4,982.54	4,640.02
8/17/60	"	1,822.40	1,697.38
9/8 & 9/19/60	Davison Chemical	62,231.58	23,933.68

18. Radiological Health and Safety

A. Organization

Henry Grieb, Chief Safety Engineer, is responsible to Robert Haffner, Manager, Industrial Relations. Previously, Grieb was responsible to Dr. John Zambrow, General Health and Safety, for the programs at both Bayside and Hicksville. Grieb has one assistant, a Joseph Krolneck, who reported to Grieb on January 1, 1961. Previously, Krolneck was a technician performing dry box operations at the Hicksville plant for 17 months prior to January 1, 1961. Krolneck reported that he has no formal training and is presently undergoing on-the-job training under Grieb. Grieb has been doing health and safety work for Sylvania-Corning (Sylcor) since 1948. He said that he spends 99% of his time at Hicksville and 1% of his time at Bayside. Grieb stated that he reviews and inspects operations involving criticality

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as well as health and safety, and noted that Sheldon Strauss sets up criticality limits for each job operation. He (Grieb) sees to it that the operations are performed in accordance with the specifications set down by Strauss. Grieb stated that the two previous assistants he had, J. Meely and R. F. Andre, have been let go due to the austerity program and cut-down in sales, and that just Krolinck, himself and a secretary comprise the health and safety group.

B. Written Instructions and Training

According to Grieb, written instructions have been supplied to all personnel. Grieb made available copies of both special nuclear and source material safety instructions, which are included in the licensee's file. These instructions are written on blue, white and red paper. The instructions on blue paper specifically govern the handling of special nuclear materials (high criticality stations, SNM); the instructions on white paper (normal limits stations); and the instructions in red (cleaning stations). Special instructions for blue, red and white criticality stations include the stations' rules for transportation to and from the station and operating safety instructions. Blue, white and red paper instructions also contain instructions for the handling of special nuclear materials noted in the three aforementioned categories. The instructions for handling the specific materials throughout the plant are composed of general rules on storage, performance of operations, accountability and description of work stations. Rules governing the transportation of material throughout the plant are also on hand. Copies of all instructions noted above are included in the licensee's file.

C. Medical Program

Under Dr. R. Young, the licensee's physician, physical well-being examinations are provided for all employees both at Hicksville and Bayside. These examinations, performed every 18 months, include chest X-rays, blood counts and bioassays. Pre-employment and termination physical examinations are also given by Dr. Young. The highest urine sample found was 2 ug U/l for a 24 hour sample. The sample was analyzed by Controls for Radiation.

D. Personnel Monitoring

Approximately 47 persons are under the film badge program. Film badges are worn by accountability, inspection, fluoroscope, chemical cleaning and melting personnel as well as X-ray users. Film badges had been supplied by Nucleonic Corporation of America on a weekly basis, but since January, 1961, the Landauer Corporation of Chicago has been supplying Sylcor with film badges on a biweekly basis.

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The only film badge records available were for the last quarter, ending December 31, 1960. Grieb stated that the previous film badge records were being put on IBM cards in order to get all the information required under the new Part 20, and that the IBM unit had been shut down. He reported that he was presently accumulating all 13 week totals and cumulative exposure totals. He pointed out that his secretary was performing this tedious operation at the time of inspection. The inspector noted that Grieb's secretary was, in fact, working on previous personnel exposure records in an attempt to bring all records up to date in order to comply with the requirements of the new 10 CFR, Part 20. The records reviewed for the quarter ending December 31, 1960, with the exception of David Newman, a Sylcor machinist who showed 5.7 r beta exposure, showed exposures ranging from between zero to 1.50 mr for a two week period. Most of the badges showed less than 25 mr for a two week period. Investigation of the Newman incident on December 22, 1960 indicated that the exposure was to the badge only and not to the individual. Newman is presently engaged in machining operations and is not involved with radioactive material.

E. Radiation Monitoring Instrumentation

The following operable instrumentation was on hand at the time of this survey:

- 3 ore lokator NCA gamma survey meters, range 0-25 mr
- 1 Juno, range 0-5 r
- 2 Sampson alpha-gamma survey meters, range 0-12,000 cpm
- 3 Eberline gas alpha proportional counters, range 0-100,000 cpm
- 1 Tracerlab monitor, range 0-20,000 cpm
- Tracerlab super scaler and alpha scintillation counter and scaler for analyzing air samples

F. Survey Program

1. Direct Radiation Surveys

Incoming and outgoing shipments are checked for contamination both by smear samples and by direct radiation readings by Grieb or his assistant whether or not these shipments are simply going to and from Hicksville and Bayside or to another licensee. Radiation surveys are made of all new operations and are periodically taken at various locations throughout the plant. Surveys are also made at the 60 kv fluoroscope and 150 and 250 kv X-ray machines on a quarterly basis.

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2. In-Plant Air Surveys

Grieb reported that aerosol samples are periodically taken using a Hudson air gas beam, and 1-1/8" diameter Whatman 41 filter paper is used. He stated that air samples are taken at all new operations or when operational changes are made. He added that general air breathing zone and processing samples are taken at all new or changed operations. At least two air samples per year were reported to have been taken by Grieb. Records of these samples reviewed showed the highest result at both (Hicksville and Bayside) to be 100 dpm per cubic meter. Most samples were less than 30 dpm. Results at both Hicksville and Bayside were reported in dpm per cubic meter and not in uc/ml as required by the regulations. Grieb, in the presence of the inspectors, started making adjustments to change the dpm per cubic meter to uc/ml. Grieb reported that since June, 1960, there were not too many operations in progress, and that few air samples had been taken.

3. Stack Effluents

Grieb stated that periodic stack effluent samples are taken using isokinetic sampling techniques. He added that on the APPR operation, the cut-off, grinding and vacuum melt operations were hooked up to electrostatic precipitators located in the exhaust. A record dated 11/9/59 measuring the discharge effluent from #4 exhaust hood which contained the precipitator unit was noted to be recorded as 132 and 101 dpm per cubic meter for the two samples collected. These samples were collected without benefit of an isokinetic sampling device. On June 13, 1960, results of the two samples were noted to be reported as 1.3×10^{-11} uc/ml for sampling of duct #2 and $.17 \times 10^{-11}$ uc/ml for a sample taken at duct #3. Grieb, in the presence of the inspectors, changed the dpm per cubic meter readings recorded for November 13, 1959 to uc/ml.

4. Smears

Smear samples were taken using a Whatman 41 filter paper for a 100 cm² area. As noted prior in the report details, smears are taken on all outgoing and incoming shipments as well as in the general process areas. Smears of incoming shipments range between 35 to 120 alpha dpm/100 cm². Smears taken on outgoing shipments, however, were less than 70 dpm/100 cm². The highest smear found in the malt room of the general process area was 506 alpha dpm/100 cm². The average of all smears taken was only 60 dpm/100 cm².

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5. Liquid Effluent Monitoring

Records of surveys conducted on liquid wastes, which are marked prior to release to the septic system, were reviewed. Records of samples taken in the sump ranged from 1.5×10^{-9} to 4.8×10^{-7} uc/ml. The survey area is located within the restricted area and is fenced-off by an 8' high cyclone fence.

6. Records

Records of personnel monitoring were noted to be maintained only for the last quarter ending December 31, 1960. No other reviewable records were available. The reason for this is discussed under D, "Personnel Monitoring." Direct radiation and airborne contamination records are maintained as well as records of waste disposal. Records of stack air samples and general air and breathing zone samples are also maintained. However, it was noted that in several instances, both stack air and general air samples were recorded in dpm per cubic meter and not in uc/ml. As noted prior in this report, Grieb, at the time of the inspection, was converting the dpm readings to uc/ml readings.

19. Posting and Labeling

Under License SNM-82, all entrances to the commercial plant were posted with a "Caution - Radioactive Materials" sign and symbol. The incoming vault is locked and posted with a "Caution - Radioactive Materials" sign and symbol. The key to this vault is only available to accountability personnel. The materials stored in the incoming vault were found to be labeled with the proper sign. However, special nuclear material was found to be labeled with the proper sign and identified by a process number, but was not labeled as to the amount of material. Examples of material which was not labeled as to the amount were several wrapped finished plates, each containing from 7 - 15 grams of U-235, and incoming raw materials and final scrap containing in excess of 100 grams of enriched uranium. Several containers containing samples of enriched uranium did not show the amount of enrichment or the weight. The inside container of these sample containers had a notation as to the weight uranium, but did not have any notation as to the enrichment. In the plant area, it was noted that fuel elements which contained 20% enriched uranium and which were stored in four coffins, each coffin containing six elements (175 grams per element), were not labeled as to amount or type of material. The element numbers were noted on the coffin, but not a radiation caution sign or symbol. The same was true for a container containing two elements which were fabricated for the University of Maryland.

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With respect to the conditions noted above, Boll, Accountability Manager, through the records maintained in the Accountability Office, was able to identify each item noted above by the process number or the element numbers.

Under License SNM-141, the areas in which waste material or scrap were stored at Bayside were noted to be properly posted with the "Caution - Radiation Area" sign and symbol. All containers and pieces were noted to be properly labeled.

Form AEC-3, "Notice to Employees", was noted to be posted at the entrance to the restricted areas both at the Bayside and Hicksville plants.

20. Safety, Fire Protection and Security

General safety instructions and lectures have been given to employees both at Hicksville and Bayside. The written instructions available are concerned with the handling of pyrophoric materials, burning hood operations, hazards of thermal burns and fire and/or explosion, safe handling of toxic materials, packaging of pyrophoric materials, the hazards from radioactive materials and contamination, and the handling of incoming and outgoing radioactive shipments. A copy of the safety instructions is included in the licensee's file.

Fire drills were reported by Grieb to be carried out at least twice a year. Fire-fighting wardens and teams have been organized from the various employees both at Hicksville and Bayside. These groups have been lectured and instructed by Grieb.

A security guard force is in existence both at Bayside and Hicksville. Both facilities are enclosed by an 8' steel cyclone fence and are patrolled by guard force personnel 24 hours a day.

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PART 40 INSPECTION

SYLCOR DIVISION

Sylvania Electric Products, Inc.
Hicksville, Long Island, New York
Bayside, Long Island, New York

Dates of Inspection: March 13, 14, 1961 (Announced)

Persons Accompanying Inspectors:

None.

Persons Contacted:

W. J. Donahue, Accountability Representative, Bayside

DETAILS

No operations involving material obtained under License C-3700 were in progress either at Bayside or Hicksville. There are only 15 Sylcor people employed at Bayside at present. Donahue, Accountability Representative, Bayside, stated that two of the 15 people had been periodically working with the reduction of uranium tetrafluoride and uranium hexafluoride for Union Carbide. He also added that during the performance of the above operations, 50 to 100 gram charges are employed, but that no work had been done for some time. Inspection and observation of the areas of use on the second floor of the Bayside facility showed that no work involving radioactive materials was in progress. At Hicksville, it was also found that little or no operations involving depleted or natural uranium were in progress at the time of the inspection.

The health and safety operations, accountability, security, etc. are the same as noted under the Part 70 inspection.

Several containers containing depleted uranium in the form of skull and dross from melting operations, although noted to be labeled with the proper radiation sign and symbol, did not have any notation as to the amount or type of material. Each of these containers contained at least 5 pounds of uranium.

SYLCOOR DIVISION
Sylvania Electric Products, Inc.
March 15, 1961

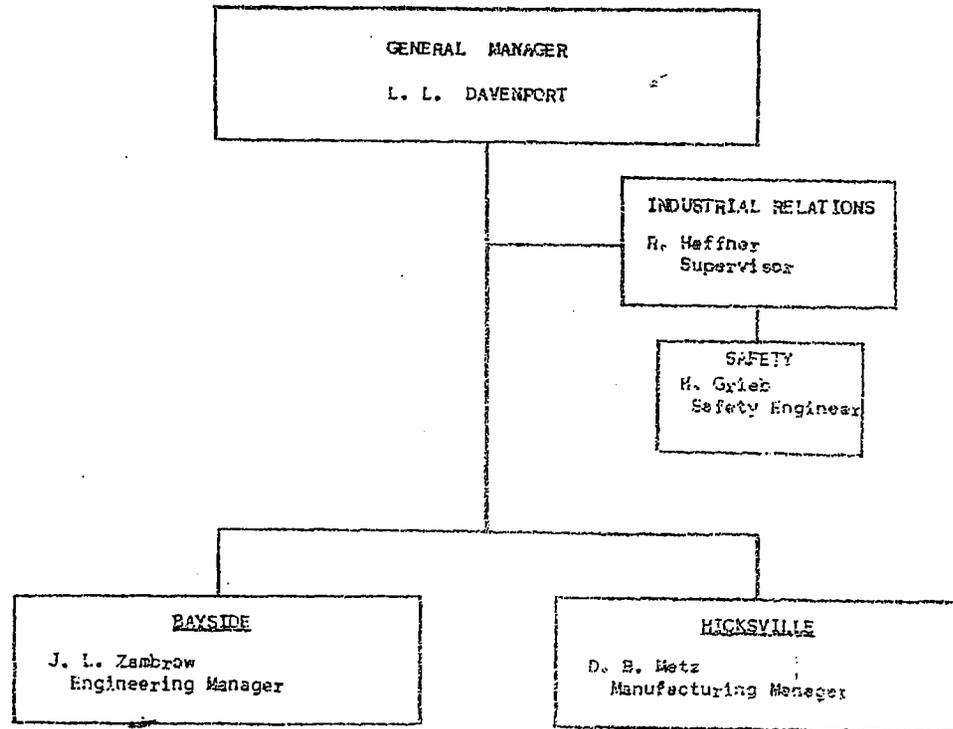


Exhibit "A"

SYLCOOR DIVISION
Sylvania Electric Products, Inc.
March 15, 1961

Exhibit

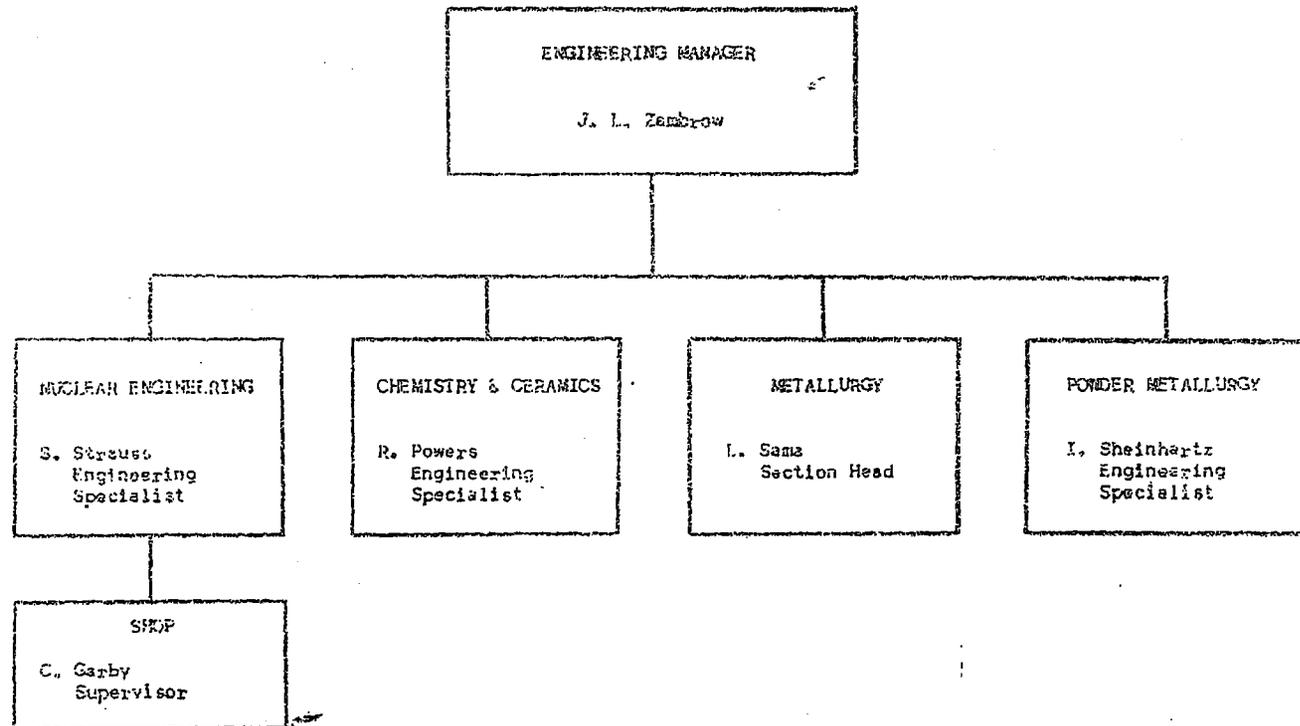


EXHIBIT "B"

SWILOR DIVISION
Sylvania Electric Products, Inc.
March 15, 1961

Hicksville

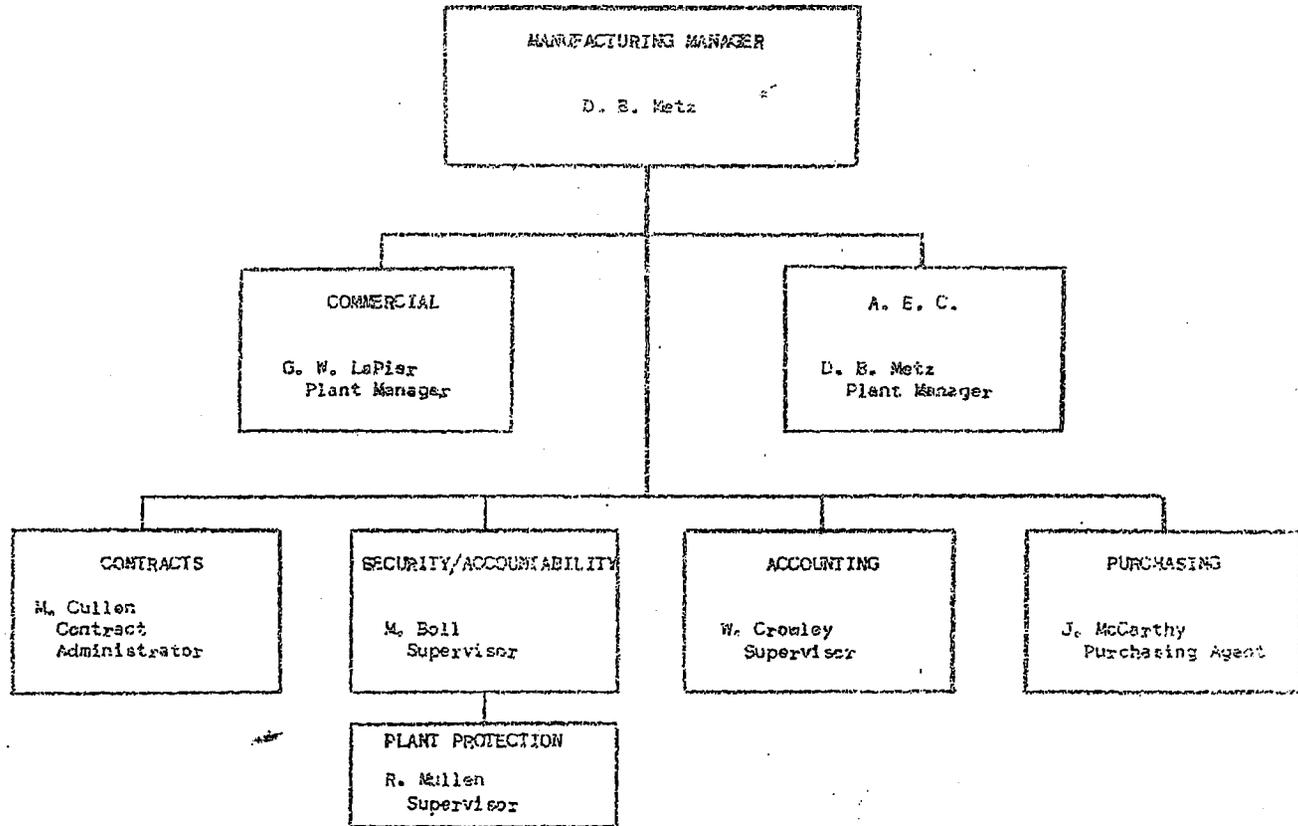


Exhibit C

OPTIONAL FORM NO. 10
5010-104

UNITED STATES GOVERNMENT

Memorandum

TO : Leo Dubinski, Assistant Director for Materials
Division of Compliance DATE: May 1, 1963

FROM : Richard B. Chitwood, Inspection Specialist (Criticality)
Division of Compliance

SUBJECT: SYLCOR DIVISION, SYLVANIA ELECTRIC PRODUCTS, INC., HICKSVILLE,
LONG ISLAND, NEW YORK - SNM-82

INTRODUCTION & SCOPE

A visit was made to the Sylcor Division of the Sylvania Electric Products, Inc., at Hicksville, Long Island, New York, on April 17 and 18, 1963, by Richard Chitwood, of the Division of Compliance. The purpose of the visit was to inspect Sylcor's licensed activities, primarily as related to criticality prevention practices. The inspector toured the Sylcor reactor fuel fabrication facility accompanied by Messrs. Henry E. Grieb, the Safety Engineer and R. A. Alto, the Accountability Supervisor.

The inspector discussed procedures, administrative practices, personnel training, and emergency programs with the cognizant licensee personnel listed below. Records and reports related to the above practices were also reviewed by the inspector.

D. Boyd Metz	Hicksville Site Manager
Grant W. LaPier	Plant Manager, Commercial Operations
Richard A. Alto	Supervisor of Commercial Accountability
Henry E. Grieb	Safety Manager

ORGANIZATION

The organizational responsibilities do not correspond entirely with the chart shown in the licensee's application for license renewal, dated February 12, 1962. The Health and Safety Officer, Henry E. Grieb, reports directly to the Hicksville Site Manager, rather than to the Personnel Manager.

Mr. Richard A. Alto, Supervisor of Commercial Accountability has the responsibility for quality control and production planning in the facility. In addition, it appears from discussions with Mr. Alto, that he and Mr. Diot have worked with the consultants in

(continued)



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establishing critical mass control limits advocated for use in the plant in the licensee's application for renewal mentioned above. Stoller Associates provide a technical evaluation service for the licensee. They serve as consultants in making nuclear safety evaluations for the licensee on a request basis. They do not audit the licensee's activities nor do they observe the various operations to evaluate the hazardous contingency potential.

PROCEDURES

Mr. Grieb stated that he provides the only safety audit of the plant activities. He stated that the plant operations are checked several times each day for compliance with the safety rules. Particular emphasis is placed on adherence to criticality prevention practices as prescribed by the license procedures. Furthermore, Mr. Grieb pointed out that he seldom notices violations but when he does, he writes a letter to Mr. LaPier, the Plant Manager, with copies directed to Mr. D. B. Metz, the Manager at the Hicksville site. Attached as Appendix A is a copy of such a letter which was sent to Mr. LaPier as a result of procedural violations noted during the tour of the facility with this inspector.

In this connection, the inspector reviewed letters of violation which had been sent to the Plant Manager over a period of approximately two years. It was interesting to note that many of the violations are repeat items and are related to areas of administrative control, i.e., improper storage of special nuclear material, improper movement, over-batching, etc.

CRITICALITY CONTROL

Tour

The inspector toured the Accountability section of the facility with Messrs. Grieb and Alto. The production section was toured with Mr. Grieb. A number of deviations from the licensed activities and accepted control practices were noted by the inspector and the accompanying licensee representatives. In addition, certain fundamental flaws were observed in the equipment design and procedural controls as related to the criticality prevention program.

Discussed below are the items of noncompliance found by the inspector in the course of the subject inspection. These items may be identified with material in two applications for amendment to the subject license. The application transmitted to LR on November 25, 1958 and the application transmitted to LR, January 29, 1960, both by Mr. G. W. Edwards with the latter application dated January 8, 1960, will be referenced in identifying the items of noncompliance. The subject license is organized into five sections. Section III, deals with criticality and material control and for the purpose of identifying the items of noncompliance, only Section III will be referenced

(continued)

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with the appropriate amendment identified according to date.

Weighing Room

1. License Section III.C.6.a (11/25/58)

"Only one carrier rack will be brought into the operating station at one time except as specifically provided for in Section 9...."

A wooden box containing fuel element cores and an unidentified batch of cores and ladders from another job were observed on a table in the weighing room.

2. License Section III.A. (11/25/58) Criticality Limits

"The limits of U235 allowed in any operating station at one time is specified in Appendix B on the basis of the type of uranium or uranium-containing material involved and the type of operation performed....."

- a. A container was observed on one of the storage shelves in the weighing room, with 2,398 grams of uranium metal enriched to greater than 90% in the isotope U235. The maximum mass limit in this case is 2 kilograms U235.
- b. Two other cans were noted in the weighing room which contained 3,198 grams and 3,211 grams respectively, of uranium metal enriched to greater than 90% in the isotope U235. Here again, the mass limit for massive (low void ratio) metal is 2 kilograms.

Storage Vault

3. License Section III.D.2.b. (11/25/58) Storage-Continuous Shelving

"...In the case of storage on the continuous shelves, spacing will be maintained by clearly visible markings outlining usable positions, at least one foot apart on the shelf.

(continued)

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The space between these positions will be clearly marked so that Accountability personnel will know that such space may not be used for storage. Again, only the amount of material specified in Appendix B will be allowed in each of the spaces which is used for storage...."

- a. Four fuel plates from a project 3203 and a plate identified as LBF 99 were observed to be on the shelf area between two storage stations, containing broken uranium metal buttons of U235 enrichment greater than 90%.

The area containing the above plates should be empty. This is designated by a yellow cross mark on the shelf. The inspector pointed out that a physical barrier would be more effective than administrative control in preventing the placement of fissile material in these unauthorized areas.

- b. Two containers of uranium metal highly enriched in U235, (identified as ATR 3230 raw material) were observed in one storage location. The quantity of uranium in the containers was 2,283 grams and 88 grams respectively. The total mass limit for this material is 2 kilograms of U235.

Production Area

4. License Section III.C.3. (1/8/60) In-Process Storage Stations

"Material may be stored in one or more in-process Storage Stations on the production floor which will be located in separate areas outside of the Operating Stations. A minimum of one foot spacing between the containers of the adjacent units in each storage station in the horizontal and vertical directions by the structural nature of the storage rack....."

Several storage racks with tote trays containing special nuclear material were observed separated by less than the required 12" edge-to-edge. Some of these appeared to be separated by as little as 3" edge-to-edge.

(continued)

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5. License Section III.B.2. (11/25/58) Identity of Material

One case was observed where a tote tray bearing scrap was not identified by a route card.

6. License Section III.D.1. (11/25/58) Storage-General

"Material will be stored in units separated by one foot, edge-to-edge, having no more than the amount of U235 specified in Appendix B for this specific type of material"

The inspector noted two storage racks (C9 & C10) which were not spaced 12" apart, thus allowing for storage of special nuclear material on the approved locations without the required between spacing units.

7. License Section III.C.3. (1/8/60) In-Process Storage Stations

- a. Storage of SNM on top of in-process storage racks is not permitted, however, the inspector noted that about 50% of the racks were being used for top storage of loaded tote trays.
- b. The in-plant storage racks have been equipped with a triangular separator, which is attached to the center of each shelf, with the triangle pointed downward toward the next lower shelf (see Figure 1a). The purpose of the triangular separator was to assure that a spacing of 12" was maintained between unit control batches. However, the inspector pointed out that the arrangement described above failed completely to serve as a separating mechanism between control batches. If the base of the separating triangle was mounted on the shelf as shown in Figure 1b, pointing upward, an effective separation between control batches would be realized. It was noted by the inspector that some of the triangular separators on the racks were not long enough to prevent the sliding of tote cans from one side of the rack to the other.

8. License Section III.C.6. and III.C.7.c. (11/25/58) Operating Rules and Transfer Rules, respectively

An operator placed a new work batch of material on a transfer cart still containing a work batch he had just completed. The approved

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In-Plant Storage Rack

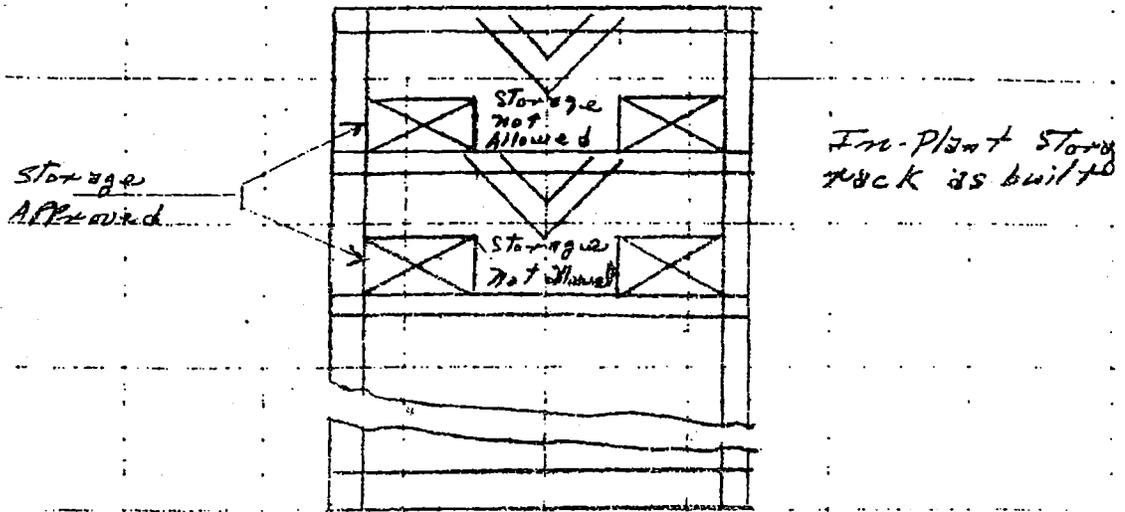


Fig. 1a

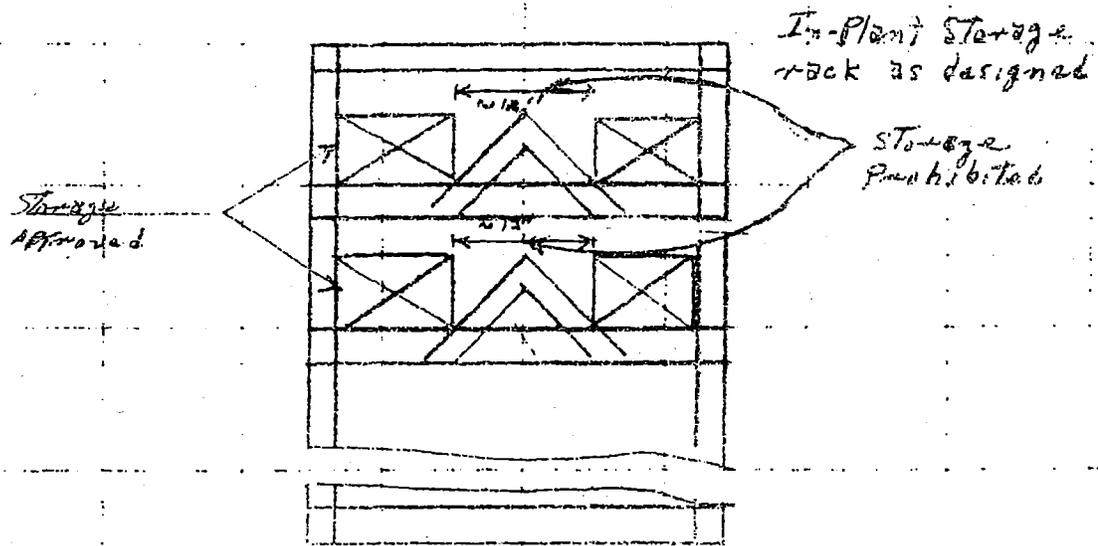


Fig. 1b

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procedure would have been to dispose of the completed material before bringing new work into the area. In the case the control limit is one control batch or work batch on the transfer cart at one time.

9. License Section III.C.I. (1/8/60) Material Control Carrier Racks

"All carrier racks will have a central portion to contain the active material and 6" side borders where no special nuclear material will be placed. Thus, as these racks are placed side by side in any manner, they will maintain a spacing of at least one foot between the material in adjacent racks...."

The required spacing of 12" between a loaded transfer cart and a work table containing a rack of evacuated picture frames was not maintained in one instance. It was pointed out by the inspector that this violation could be avoided by installing an extended peripheral rail around the cart to physically prevent violation of the spacing requirements. It was also noted that the majority of the transfer carts do not contain a side border or other device to assure the required one foot spacing stipulation in the above license section.

10. License Section III.C.7.c. (11/25/58)

"Only one carrier rack will be permitted in any operating area at a given time except as specifically provided in Section 9.."

Placement control batches from two different jobs on the same granite work table in the inspection room was observed.

The following additional items were noted by the inspector. These were not reported by Mr. Grieb in his letter of April 17, 1963 to Mr. LaPier. These items do not constitute noncompliance with the license authorization but should be considered for correction since they present a significant hazard from nuclear criticality.

(continued)

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1. A mop pail of unsafe geometry (approximately 12" in diameter by 12" high) was noted in the rolling and punch press area. In this same area, aluminum cake pan tote trays, 3" high by 11" wide by 18" long, containing Al-U alloy in the form of cores and ladders which may contain up to 2 kilograms of U235 were stored on open storage racks. The contingency that the contents of the above tote trays could be knocked into a mop pail containing water, seems reasonable. In the event such an occurrence should take place, a condition of super criticality might be experienced.
2. The storage of tote trays 3" high by 11" wide by 18" long, which may contain up to 2 kilograms U235 alloyed with aluminum as broken ladders and cores in the vault which contains a water fire spray system is not desirable. Although the vault cannot be flooded, the tote trays containing the high void fraction material could be filled with water. Approximations made by the inspector, assuming optimum moderation of the material within the tote trays indicate little if any margin left to allow for interaction with other nuclearly active units or neutron reflectors or for overbatching, if criticality is to be prevented in the event a loaded tray should become filled with water.

The above materials fall into Appendix B, of the license amendment dated 1/8/60, category 2e and 2l, in that they represent punched cores and rods of thickness or diameter equivalent to 1/10 inch or more. According to Appendix B, dated 1/8/60, the mass limit for O_y (>30) in this form is 2 kilograms of contained U235. This material, if emersed in water, could approximate a heterogenous water-uranium 235 system insofar as neutron multiplication characteristics are concerned. It is considered that the batch limit of 2 kilograms of contained U235 is excessive in view of the high H/U235 ratio equivalent which could be realized with this material.

3. Several standard 20" birdcages used by Oak Ridge for shipping up to 10 Kg O_y (>90) were noted. The circumstances surrounding these damaged containers which are used to supply material in support of AEC contract activities will be discussed in Appendix B.

(continued)

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EXCURSION MONITORS

Licensee's excursion monitors and emergency procedures were covered in the course of this inspection. In this area, licensee appears to comply with his license requirements.

SUMMARY MEETINGS

The inspector discussed his findings in two separate meetings with various licensee management personnel. The first meeting was with Mr. Metz, Manager of the Hicksville site, and the second meeting was with Messrs. LaPier and Alto.

In the meeting with Mr. Metz, the inspector discussed the following:

1. The items of noncompliance observed by the inspector.
2. The deficient administrative control practices as related to maintaining batch separation.
3. The lack of adequate training and apparently poor employee discipline related to the licensee's handling and movement of special nuclear material.
4. The lack of understanding of basic nuclear safety concepts of the licensee as indicated to the inspector by:
 - a. The failure of these personnel to recognize the ineffectiveness of the triangular tote tray separator design used on the in-process storage racks,
 - b. The failure to recognize that Al-U alloy ladders and cores in tote trays (equivalent to approximately 1/4" in diameter rods) represented material of a high H/U potential in the event water should fill the container,
 - c. The failure to consider as a potential hazard the possibility of dropping a tote tray containing up to 2 kilograms U235 in the form of ladders and cores in a water-filled mop pail, which is not geometrically safe from nuclear criticality.
5. The desirability of having an independent audit of nuclear safety practices made by persons knowledgeable in this field.

(continued)

Leo Dubinski

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6. The fact that over a period of two years the letters of notice to the Plant Manager by Mr. Grieb, which cite violations of the AEC license and other in-plant rules associated with the plant operation are primarily repeat items dealing, for the most part, with failure to observe administrative procedures related to the movement, handling, and processing of special nuclear material.

Mr. Metz stated that immediate steps would be taken to:

1. Install effective physical barriers between the storage positions in the storage racks both in the vault and the in-process storage racks, to insure that the required spacing between units would be maintained.
2. Install a physical guard on carts which will prevent them from being brought closer than the required spacing from a work station.
3. Increase employee awareness of nuclear safety rules associated with the processing of SNM and to exercise disciplinary measures as required to minimize violations of procedural control.

Mr. Metz expressed concern about the many deficiencies described by the inspector. He pointed out that his management has expressed to him as a matter of policy, that if an accidental near approach to criticality should occur, or if it would appear that such a situation is reasonably credible at the Sylcor Reactor Fuel Fabrication Facility, that the facility would terminate all operations involving special nuclear material after completing existing commitments.

In the meeting with Messrs. LaPier and Alto, the inspector covered the problem areas described to Mr. Metz. Mr. LaPier, as did Mr. Metz, expressed the intention to take immediate corrective steps relative to the deficiencies noted.

Attachments:

1. Appendix A
2. Appendix B
3. Figures 1a and 1b

C O P Y

APPENDIX A

LICENSE VIOLATIONS

April 17, 1963

G. LaPier

During a license inspection today with Mr. Richard Chitwood, of the Compliance Division of the AEC, the following license violations were noted.

ACCOUNTABILITY

1. On a table in the middle of the weighing area there was a wooden box containing SMI cores in bags and an unidentified batch of cores and ladders from an aluminum job.
2. on one of the storage shelves in the weighing room there was a can identified as AMF-121-SFM. It contained U235 in the quantity of 2398 grams. The limit is 2 kg.
3. There were two more cans in the weighing room with the following identification and quantities.

5FEL487 in the quantity of 3198 grams
 5FEL488 " " " " 3211 grams

The limit is 2 kg.

4. In the vault there were 4 plates from project 3203, and 1 plate identified as LBF99 on a shelf between two stations containing broken buttons of U235. The area that these plates were in is supposed to be empty. It is not to contain any SM bearing material.
5. On a shelf in the vault there were two containers of ATH 3230 raw material. One contained 2233 grams and the other contained 86 grams. The limit is 2 kg.

PRODUCTION

1. In the Control Area there were storage racks with tote trays that were spaced less than 12" apart on many shelves. These shelves must have a physical barrier built in between to maintain the 12" separation.

APPENDIX B"Damaged 20" Birdcages at Sylcor"

A number of damaged and broken standard 20" birdcages were noted in the Sylcor Reactor Fuel Fabrication Facility. These were received from Oak Ridge, and according to the licensee, they were used to ship highly enriched uranium metal to the licensee for use on AEC contract jobs. The licensee stated that pictures of faulty birdcages of this type have been taken and sent to the New York AEC Accountability Office.

The broken birdcages, observed by the inspector, are similar to the unit shown in AEC Manual 7430-034-B-6, except that the container support members are horizontal diagonals made of angle iron, which are welded to the mid-point of the corner angle iron members of the birdcage frame. Without exception, the point of failure on the broken birdcages was at the weldment joining the diagonal support members to the birdcage frame. The inspector noted one birdcage with the container displaced from the center approximately 3". In this case, the container had experienced failure of the weldments on two adjacent diagonal support members. Broken weldments were noted on four other birdcages of this type.

To Files

Ralph G. Page, Chief
Enforcement Branch, DLR

May 15, 1963

C. D. Luke, Chief
Criticality Evaluation Branch, DLR

Socket 70-97

I have reviewed the proposed letter to Sylvania relative to your inspection on April 17 and 18.

For various reasons, I suggest the following revisions on pages 3 and 4:

A, p.3. (Revised). "There should be no mop pails, waste containers and other such vessels of unsafe geometry in any process or storage area, where accidental criticality could occur as a result of combining the special nuclear materials with water. Any moderation controls should include storage and handling in unbreakable and leak-tight containers."

1st par., p.4. delete 1st 2 sentences.

2nd par., p.4. Insert after 2nd sentence, "Wherever possible nuclear safety should be insured through use of proper mass and geometry limits which minimize the dependence of safe operation upon administrative control".

I am taking the liberty of routing this back to you through D. A. Nussbaumer, so that you may incorporate any recommendation or change that he may have.

cc: D. A. Nussbaumer

NO.	DATE	TO	FROM
MAIL OFFICE		MAIL OFFICE	
MAIL OFFICE		MAIL OFFICE	

SYLVANIA-ELECTRIC PRODUCTS INC. Subsidiary of GENERAL TELEPHONE & ELECTRONICS CORPORATION

No. 516 433 8228

516 WELLS 1-3500



1966 JAN 26 PM 12 27

Sylcor Division

U. S. ATOMIC ENERGY COM. REGULATORY MAIL SECTION

Cantigue Road Hicksville, N. Y. 11802

January 21, 1966

Ref: SLR:JJR:RH 70-97

[File Copy]

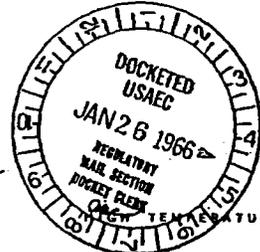
Mr. Eber K. Price, Director Division of State & Licensee Relations U. S. Atomic Energy Commission Washington, D. C.

Dear Mr. Price:

With reference to your correspondence dated January 11, 1966, I wish to present the following information.

- 1.a. The operator of a swager was using the drum to hold a tote tray of material. He was removing pieces from the tote tray, swaging them and returning them to the container. At the time of the inspection, he was out of the area. A work table was put alongside of the swager in order to correct this situation and the operator reinstructed.
- 1.b. At the time of the inspection, all sprinkler heads were removed and the openings closed with pipe plugs. It was our belief there was essentially no possibility of leakage from such a standard pipe fitting procedure. However, following the inspection, all sprinkler piping was completely disconnected from the main line. The main water line for the western portion of the building runs along the east wall of the vault. After disconnecting all spinkler piping, all pipe joints of the main water line were surrounded with metal deflectors so that any leakage from the main line would be deflected down the wall and away from the storage racks which are west of the main line within the vault.
- 1.c. All persons involved with the powder blending operation have been reinstructed as to the necessity for no smoking in this area. No violations have been noted for the last six months.

NUCLEAR FUEL ELEMENTS



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K. Price

- 2 -

January 21, 1966

2. There seems to be some misunderstanding about the number of urine analyses for the individual involved because on January 12, 1965, when the results of the first analysis were received, a second 24 hour sample was promptly collected. The second sample was sent to Controls for Radiation at 130 Alewife Brook Parkway, Cambridge, Mass. The second sample was reported to have a concentration of 3.62 DPM per liter. As a result of this low concentration, no further sampling was deemed necessary.
3. The threshold detectors are the property of the New York Operations Office of the A.E.C. We were instructed to hang them in the plant years ago because we were processing enriched uranium under a contract with the New York Office. We still have an active contract with the New York Office. If it is necessary to have these plutonium sources included in our license, we will amend it. I would appreciate your comments on the need for a license revision, considering the circumstances.

A revised training program, including all operating personnel, has been initiated. We intend to carry out a continuing "refresher program" periodically, at regularly scheduled intervals.

All of the areas of non-compliance listed have been eliminated as of this date except the problem involving the threshold detectors and I shall await your comments.

Very truly yours,

SYLCOR DIVISION
SYLVANIA ELECTRIC PRODUCTS INC.

Grant H. LaPier
Grant H. LaPier
Plant Manager
Commercial Operation

GWL:eg

APPLICATION FOR RENEWAL

OF
SYLCON'S SNM 32

SPECIAL NUCLEAR MATERIALS LICENSE

LAB File Copy

SPECIAL NUCLEAR MATERIALS LICENSE OUTLINE

I. General and Corporate Information

A. Scope

1. Purpose
2. Schedule
3. Site

B. Corporate Information

1. Incorporation
2. Location
3. Officers

C. Organization & Personnel

1. Organization Chart
2. Key Personnel

D. Consultants

II. Fabrication Process

A. Operating Steps

1. Melting
2. Size Reduction
3. Shearing
4. Radiography
5. Sample Punching
6. Punching
7. Degreasing
8. Press Stroke
9. Welding
10. Heating
11. Machining
12. Assembling
13. Brazing
14. Mechanical Fastening
15. Machining
16. Inspection
17. Border Weighing
18. Powder Weighing
19. Human Guide Weighing
20. Sintering or heat Treatment

- 21. Isostatic Pressing
- 22. Chemical Cleaning
- 23. Chemical Milling

B. Typical Fabrication Procedures

- 1. Alloy Plate Elements
- 2. Oxide Plate Elements
- 3. Clad Rod Fuel Elements

III. Operational Material and Criticality Control

A. General

- 1. Philosophy of Control
- 2. Basic Facility Data

B. U-235 Mass Limits

- 1. Limit Table
 - a. Control Hatch
 - b. High Limit Station
 - c. Low Limit Station
- 2. Safety Factor

C. Plant Operations Material Control

- 1. Criticality Limit Report
- 2. Control Hatch
 - a. Weighing
 - b. Identity of Material
- 3. Criticality Stations
- 4. In-Process Storage Stations
- 5. Containers
 - a. Casks
 - b. Cote trays
 - c. Pallet Trays
 - d. Baskets
- 6. Operating Rules
 - a. Single Hatch per Station
 - b. Boundary Limits
 - c. Single Type Fuel Assembly

- d. Change of Material Form
- e. Scrap Handling
- f. Carrier Stacking

7. Transfer Rules

- a. Operator Control
- b. Single Batch Transfer
- c. Complete Removal
- d. Carrying
- e. Assembly Transfer
- f. Assembly Limit
- g. High Limit Transfer

8. Special Rules

- a. Hot Rolling
- b. Melting
- c. Soluble Stations

9. High Limit Stations

- a. Uranium Oxide Powder Weighing
- b. Solid Scrap, Fines, Chip Storage
- c. Received Material Storage
- d. Pressed Uranium Oxide Compact Sintering
- e. Tightly Packed Plate Annealing
- f. Hot Ingot Rolling

D. Storage

- 1. General
- 2. Storage Unit Limit Criteria
- 3. In-Process Storage

- a. General
- b. Cubic Arrays
- c. Plans Arrays

4. Accountability Storage

- a. General
- b. Vault
- c. Long Term Storage Area
- d. Storage Facilities
- e. Future Storage

E. Responsibilities

- 1. Operating Personnel
- 2. Accountability Personnel

3. Health & Safety Personnel

Appendix A

IV. Shipping

A. General

B. Raw Material

C. Solutions

D. Fuel Elements

1. Shipping Coffin
2. Shipping Drum

E. Solid Alloy Scrap

1. Uranium Aluminum (>89% U-235)
2. Uranium Aluminum (<25% U-235)

V. Outside Work

A. Nondestructive Work

1. Cladding
2. Supervision
3. Quantity Limit
4. Overnight Storage
5. Shipment

VI. Health & Safety

A. General

B. Personnel Safety

1. Safety Instruction
2. Protective Clothing
3. Monitoring
4. Netting

C. Facility Safety

1. Surveys
2. Ventilation
3. Criticality Alarm
4. Fire Control
5. Under Operation

Approved by the Nuclear Regulatory Commission

SPECIAL NUCLEAR MATERIAL LICENSE APPLICATION

I. General and Corporate Information

A. Scope

1. Purpose

Sylvania Electric Products Inc., a subsidiary of General Telephone and Electronics Corporation, operates the Sylvania Division (hereinafter referred to as "Sylvania") which requires a special nuclear material license to permit it to process uranium, in various degrees of enrichment in the isotope U-235, in the metallic and oxide forms. This uranium will be fabricated into plates, rods, and other mill shapes, either unalloyed or after alloying with aluminum, zirconium, stainless steel, or other suitable metals, and these fabricated shapes may further be clad with such metals. The uranium or uranium containing alloys are intended for use in fuel plates, fuel elements, or critical assembly plates or elements, for Sylvania's own research efforts, for transfer to other licensees, or for transfer to the United States Atomic Energy Commission or its contractors.

2. Schedule

It is reported that this license will be in effect for a period of one year. Since Sylvania's production schedule will be dependent upon the needs of its customers and on

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1/15/62

competitive bidding to meet those needs, it is not possible to furnish any reliable schedule of the amount of special nuclear material that will be received and processed during that period.

3. Site

The work undertaken pursuant to this application will be performed at Sylicor's commercial fuel fabrication plant at Cantiague Road, Hicksville, Long Island, New York. It will be undertaken in a small section of one building (No. 2) (about 2,000 sq. ft.) or in a new building 4, of approximately 50,000 sq. ft. area.

I-A-(2-3)
1/25/62

Vice Pres. & Gen. Counsel

Wm. F. Rueger

Treasurer

Walter R. Seibert

Controller

John E. Rhodes

Officers and Managers of Sylecor are as follows:

G. K. Moran (Vice Pres. of Sylvania)	General Manager
D. B. Metz	Pickaville Site Manager
G. W. La Pier	Plant Manager - Commercial Operations

b. Ownership

Sylecor is the manufacturing and marketing division of Sylvania Electric Products Inc., subsidiary of General Telephone and Electronics Corporation, a New York Corporation.

1-2 (3-1)
1/15/62

B. Corporate Information

In addition to the information furnished above, corporate information, pertaining to Sylvania Electric Products, Inc., as required by Section 70.22 of Part 70 of Chapter 1 of Title 10 of the Code of Federal Regulations is as follows:

1. Sylvania Electric Products Inc., is incorporated in the State of Delaware, U.S. A.
2. The corporate offices are at 730 Third Avenue, N.Y. 17, N.Y.
3. The list of corporate officers, all of whom are United States citizens, are as follows:

	<u>Business Address</u>
<u>Chairman of the Board</u> Don G. Mitchell	730 Third Avenue New York, N. Y.
<u>President</u> Gene K. Rears	730 Third Avenue New York, N. Y.
<u>Senior Vice Presidents</u> Matthew D. Burns	Rayonite, Barre.
Henry F. Childer	50 Boston Street Boston, Mass.
George G. Connor	730 Third Avenue New York, N. Y.
Frank A. Dady	50 Boston Street Boston, Mass.
Henry Adams	50 Boston Street Boston, Mass.
Marion E. Fitzgibbon	730 Third Avenue New York, N. Y.

I-P(1-3)
1/13/62

Vice Pres. & Gen. Counsel

Wm. P. Rusger

Treasurer

Walter R. Saibert

Controller

John E. Rhodes

Officers and Managers of Sylvania are as follows:

C. K. Moran (Vice Pres. of Sylvania)	General Manager
F. B. Metz	Hicksville Site Manager
G. W. Le Plar	Plant Manager - Commercial Operations

4. Ownership

Sylvania is the manufacturing and marketing division of Sylvania Electric Products Inc., subsidiary of General Telephone and Electronics Corporation, a New York Corporation.

100-3-1
2/15/62

B. Corporate Information

In addition to the information furnished above, corporate information, pertaining to Sylvania Electric Products, Inc., as required by Section 70.22 of Part 70 of Chapter I of Title 10 of the Code of Federal Regulations is as follows:

1. Sylvania Electric Products Inc., is incorporated in the State of Delaware, U.S. A.
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<u>President</u> Gene K. Bears	730 Third Avenue New York, N. Y.
<u>Senior Vice Presidents</u> Matthew D. Burns	Essexville, Maine.
Henry F. Callahan	60 Boston Street Salem, Mass.
George C. Connor	730 Third Avenue New York, N. Y.
Frank N. Farley	60 Boston Street Salem, Mass.
Henry Jahnke	53 Second Avenue Watson, Mass.
Marion E. Fitzgerald	730 Third Avenue New York, N. Y.

C. Organization and Personnel

1. A partial chart of Sylcor organization, showing the Commercial Operation which is involved in license and "station" work is given in Figure 1-C-1.

2. Key personnel Qualifications

Following are brief biographies of key personnel indicating their qualifications.

1-C-(1-2)
1/15/62

a. Director of Commercial Manufacturing Unit

Grant LaPier

Mr. LaPier joined Sylcor in 1959 as Manager of the Commercial Plant. He was concerned with all aspects of fuel manufacture.

Before joining Sylcor, Mr. LaPier was associated with the Clevite Corporation. His 21 years of experience with Clevite includes 15 years of experience in management as Shop Foreman, Department Head, and Plant Manager of the Aircraft Bearing Plant of the Cleveland Graphite Bronze Company, the predecessor company of Clevite Corporation, and three years experience in production, marketing, and development of nuclear fuels. His responsibilities included the fabrication of 310 aluminum elements for MTR, 50 aluminum elements for the N-2 reactor in Sweden, 40 aluminum elements for the Naval Research Laboratory Reactor, 200 aluminum elements for the Westinghouse Test Reactor, and 1000 lbs. of highly enriched uranium plates.

Mr. LaPier is a member of the A.S.M.E., American Management Association, American Nuclear Society, Atomic Energy Club, and received technical training in metallurgy at the State of Kentucky, Kentucky, Ohio.

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1/15/62

b. Manager of Production Engineering

Harold Diot

Mr. Diot, Manager of the Commercial Production Engineering Department at Hicksville, is responsible for all engineering and design in connection with the manufacture of fuel elements at Sylvania's Commercial fuel facility.

Mr. Diot received his degree in Mechanical Engineering from Villanova University 1950 and attended graduate school at New York University where he studied nuclear engineering.

He has been in the atomic energy field for the past nine years. His experience encompasses U.S. Air Force Special Weapons Projects as well as project liaison work at the AEC Research Reactor Plant and with the Foster Wheeler Corporation prior to joining Sylvania. At Foster Wheeler, his responsibilities included supervision of a program to supply a tank-type research reactor for the French Atomic Energy Commission.

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1/15/62

c. Supervisor of Commercial Accountability

Richard A. Alto

Mr. Alto received industrial management training at Carnegie Institute of Technology. He was responsible for planning and technical liaison at Westinghouse, the Bettis operation, from 1950 to 1956.

He joined Syteor as supervisor of planning and materials control in February 1956.

He has ten years of nuclear materials experience in handling and planning in the nuclear fuel industry.

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1/15/62

d. Accountability Representative

Milton Boll

Mr. M. Boll had eight years of accounting experience before entering accountability work, and is a graduate of an accounting course at Fenkard Business School. For the last six years Mr. Boll has been in accountability work, first supervising accountability for Sylecor's production facility engaged in work for the Savannah River Operations Office and now supervising accountability on a company-wide basis. Mr. Boll now has charge of three accountability stations; Commercial Operations, AEC Savannah River Operations here at Hicksville and Sylecor Division R15 work at Fynxide, New York. He is a member of the Institute of Nuclear Material Management.

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1/15/62

a. Safety Engineer

Henry B. Grieb

Mr. Grieb has had the responsibility for the health and safety programs of the organization since 1949 and during that time has been its representative in dealing with health and safety personnel of the AEC New York Operations Office.

Mr. Grieb has directed health and safety programs for projects involving U-235 in its full range of enrichments and in various alloy and powder forms. He has participated from the health and safety point of view in design and layout of equipment and establishment of procedures used on projects involving research and development on production of nuclear fuels.

Mr. Grieb is also responsible for the supervision of Sylcor's non-nuclear health and safety programs. He is a member of the American Society of Safety Engineers.

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f. Hicksville Site Manager

D. Boyd Metz

Mr. Metz joined Sylvania Electric Products Inc. staff in June 1940. He was assigned the responsibility for metallographic and metallurgical testing in 1943, as a member of the engineering staff at Emporium, Pa.

He was assigned the responsibility for redesigning and the setting up of a metallurgical research laboratory in Bayside, New York in February 1944.

In 1952, Mr. Metz was given the responsibility for the powder metallurgical process of nuclear fuel elements at Hicksville, New York. He was promoted to plant manager of the Hicksville site in 1954.

In 1960 was assigned the complete responsibility for both commercial and AEC fuel fabrication at Hicksville and in 1961 Hicksville Site Manager.

I-C-2
1/15/62

D. Consultant

Sylcor Division has employed S. M. Stoller Associates of New York City to act as consultant. Following is a brief resume which indicates their qualifications.

S. M. Stoller Associates was formed in 1959 as a group of consulting engineers dealing with all phases of nuclear technology. Their nuclear experience dates back to 1945 on the gaseous diffusion plant in Oak Ridge.

The senior personnel include:

Sidney M. Stoller, P. E.

Experience in consulting engineering and management for approximately 20 years. Prior to forming the nuclear consulting organization, as Vice-President of Vitro Engineering Company, he had directed a complete spectrum of nuclear activities including the design of Indian Point, Lockheed Nuclear Facility, CNEN Italy, Hanford Reprocessing Plants, etc. Recently he is consultant to utilities on nuclear power and editor of the Reactor Handbook, Volume II, and graduate instructor at CCHY and NYU.

Robert W. Kupp, P. E.

Joined S. M. Stoller Associates in 1960 after nuclear experience dating back to wartime K-25 Project in Oak Ridge. Previously, as Chief Nuclear Engineer at Vitro, he had performed or directed all nuclear technology work on their projects and specifically evaluate criticality hazards in reprocessing plants as well as hazards (public and plant) in all types of nuclear facilities. He is author of numerous technical papers and graduate instructor in nuclear engineering at CCHY and NYU.

Leonard Gallery, Ph. D.

Ten years experience in application of fundamental mathematical and physical principles to nuclear energy. In reactor field has worked on core design, fuel management and shielding. In construction, he was responsible for the construction and critical experiments; while at K-25, his work was primarily that of criticality hazard evaluation. Dr. Gallery was an Atomic Energy Fellow in 1950-51.

SYLOR DIVISION

Hicksville, N. Y.

COMMERCIAL OPERATIONS

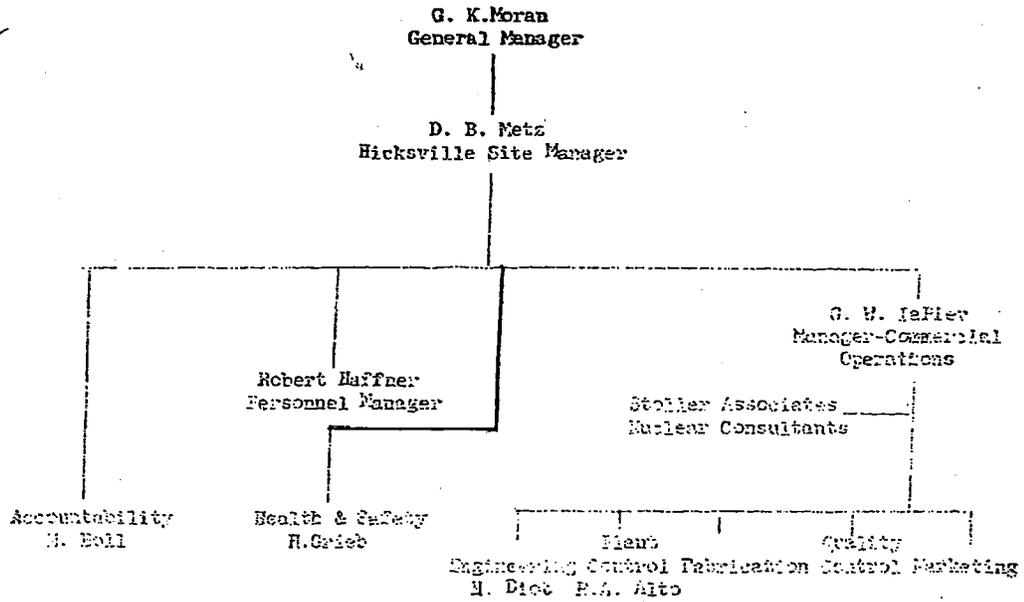
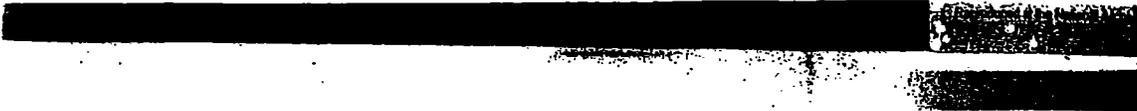


Figure 1-2-1



II. FABRICATION PROCESS

A. Operating Steps

The operating steps which may be performed in the fabrication of fuel pursuant to this application are listed below along with a description of the work performed, the types of equipment that will be used at each step, and the types of special nuclear material which will be worked on.

1. Melting

- a. Process -- Vacuum or air melting of uranium and uranium-containing alloys and casting of these melts into one or more ingots.
- b. Equipment -- Vacuum melting furnaces, air melting furnaces, associated crucible molds and vacuum equipment.
- c. Types of Material -- Melt charges (pellets, broken buttons, ingots, scrap) and poured ingots.

2. Size Reduction

- a. Process -- Both hot and cold reduction (rolling swaging or forging) of uranium and uranium-containing alloys (clad or unclad) into strips, plates, or other shapes.
- b. Equipment -- Rolling mills, swagers, forges, rod straighteners, roller levelers and similar types of equipment.
- c. Types of Material -- Ingots, slabs, plates and rods.

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3. Shearing

- a. Process -- Shearing of uranium or uranium-containing alloys (clad or unclad) to the desired dimensions as, for instance, shearing ingot slabs prior to punching or for trimming finished fuel plates to size.
- b. Equipment -- Hand and power shears.
- c. Types of Material -- Slabs, plates, and rods.

4. Radiography

- a. Process -- Radiographic and fluoroscopic examination of slabs and plates; rolled plates may also be marked for subsequent operations while on the fluoroscope.
- b. Equipment -- X-Ray unit.
- c. Types of Material -- Slabs, plates, and rods.

5. Sample Punching

- a. Process -- Punching of samples from slabs for subsequent analysis.
- b. Equipment -- Punch Press.
- c. Types of Material -- Uranium or uranium-containing alloy slabs.

6. Punching

- a. Process -- Punching of uranium or uranium-containing alloys for subsequent operations.
- b. Equipment -- Punch press.
- c. Types of Material -- Strips and punched shapes and scrap.

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7. Degreasing

- a. Process -- Cleaning of uranium or uranium-containing alloy by liquid or vapor degreasing.
- b. Equipment -- Liquid and vapor degreasers.
- c. Types of Material -- Ingots, slabs, cores, plates or finished elements.

8. Press Brake

- a. Process -- Pressing of cores into "picture frame" and forming of plates to shape and for other general purpose pressing, forming, and flattening.
- b. Equipment -- Press brake.
- c. Types of Material -- Cores, plates and rods.

9. Welding

- a. Process -- Welding of cladding material (cover plates) to "picture frames" in fuel plate assembly, and the welding of end fittings, handles, and other such items.
- b. Equipment -- Gas, arc, spot, electron beam, and inert shielded gas electrode welding apparatus.
- c. Types of Material -- Rods, plates, fuel assemblies.

10. Heating

- a. Process -- Heating of uranium or uranium-containing material prior to hot working (hot size reduction), and after cold or hot working, heat treating.
- b. Equipment -- Furnaces, salt baths, oil baths, and vacuum retorts.
- c. Types of Material -- Ingots, plates, and rods.

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11. Numbering

- a. Process -- Stamping of plates and other parts with identification numbers.
- b. Equipment -- Punch, engraving equipment.
- c. Types of Material -- Plates, rods and other shapes.

12. Assembling

- a. Process -- The assembly of the required number of plates or rods to form a fuel assembly.
- b. Equipment -- work bench, jigs and assembly fixtures.
- c. Types of Material -- Plates, rods and other shapes.

13. Brazing

- a. Process -- Brazing of previous assembly to form a semi-finished fuel assembly.
- b. Equipment -- Brazing furnaces or handbrausing equipment.
- c. Types of Material -- Assemblies of plates, rods and other shapes.

14. Mechanical Fastening

- a. Process -- Cold working of finished fuel sub-assemblies into larger units.
- b. Equipment -- Special tools and fixtures.
- c. Types of Material -- Finished steel sub-assemblies.

15. Machining

- a. Process -- Machining of uranium and vanadium-containing alloys, and of assemblies.
- b. Equipment -- Lathes; milling machines; drill presses; hand tools; and centers, cylindrical, and surface grinders, etc.

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c. Types of Material -- Fuel assemblies and sub-assemblies.

16. Inspection

a. Process -- Inspection of uranium or uranium-containing material in various stages for dimensional, surface conditions and internal conditions.

b. Equipment -- Work benches, gauging tools, surface plates and ultrasonic, dye penetrant, and eddy-current equipment.

c. Types of Material -- Plates, rods, slabs and assemblies.

17. Powder Weighing

a. Process -- Weighing of uranium oxide powder and combining with component powders (stainless steel, boron carbide, or other additives) prior to compacting or subsequent processing.

b. Equipment -- Scales or balances and drybox.

c. Types of Material -- Uranium oxide powder.

18. Powder Blending

a. Process -- Blending of weighed powder and additives; binding agents may be added at this step. All blending is done in sealed containers.

b. Equipment -- Blender and speed canister.

c. Types of Material -- Uranium oxide powder.

19. Uranium Oxide Pressing

a. Process -- Pressing of uranium oxide powder in a die to form a compact, or for coating.

b. Equipment -- Press and die.

c. Types of Material -- Uranium compound powder and compact.

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20. Sintering or Heat Treating

- a. Process -- Sintering, annealing, and other heat treatment of uranium and uranium-containing materials.
- b. Equipment -- Furnaces.
- c. Types of Material -- Ingots, plates and pressed powder compacts.

21. Isostatic Pressing

- a. Process -- Pressing of cladding material in the form of tubes or plates onto fueled cores, using gas pressure.
- b. Equipment -- Pressure Vessel and associated gas compressing facilities and instrumentation.
- c. Types of Material -- Uranium oxide pellets, uranium and uranium alloy cores and rods.

22. Chemical Cleaning

- a. Process -- Chemical cleaning of components or elements in caustic baths, acid or water baths or rinses.
- b. Equipment -- stainless steel tanks.
- c. Types of Material -- Clad plates, clad rods and assemblies.

23. Chemical Milling

- a. Process -- The stripping of cladding material or uranium-containing alloy by means of chemical etching of the material by caustic and/or acid solutions.
- b. Equipment -- Stainless steel tanks.
- c. Types of Material -- Reactor fuel plates and other types of material.

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B. Typical Fabrication Procedures

Although the steps listed in Section A above may be performed in any order, subject only to the rules contained in Section III - Criticality and Material Control - the following fabrication schedules are listed as typical of the fuel production procedures which Sycor uses. They should not be considered a binding part of this license and are subject to modification at the discretion of Sycor's technical personnel:

1. Alloy Plate Elements

- a. Melting and Casting
- b. Heating
- c. Rolling
- d. Shearing
- e. Radiography
- f. Sampling
- g. Rolling
- h. Core Punching
- i. Press Braking into "Picture Frames"
- j. Rolling
- k. Welding
- l. Rolling
- m. Radiography
- n. Shearing
- o. Assembly of Elements
- p. Trimming
- q. Welding of End Boxes
- r. Radiography

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2. Oxide Plate Elements

- a. Weighing of Powder
- b. Blending
- c. Pressing
- d. Sintering
- e. Coining (pressing)
- f. Pressing into "Picture Frame" and subsequent steps as in Procedure 1 for alloy plate making.

3. Clad Rod Fuel Elements

- a. Melting and Alloying
- b. Casting
- c. Annealing
- d. Rolling or swaging
- e. Cleaning
- f. Cladding
- g. Extrusion (subcontract to licensed vendor)
- h. Chemical Milling
- i. Swaging
- j. Annealing
- k. Swaging
- l. Cleaning
- m. Assembly

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III. Operational Material & Criticality Control

A. General

1. Philosophy of Control

All handling of U-235 enriched uranium-bearing materials within the plant may be categorized as manufacturing operations, transfer of material, storage, and shipping. To assure that no more than a safe amount of fissionable material is accumulated in any location, U-235 mass limitations as well as geometry conditions have been established for each of these categories.

Criticality stations, which normally constitute one manufacturing step, have been defined and marked, and procedures have been established to limit the U-235 content of each station to a specific quantity and/or form.

Transfers to and from criticality stations are limited to the U-235 limit permitted in a station and further by geometry considerations.

Storage areas have been established based on safe geometry as well as limited unit reactivity.

These general criteria are fully defined in subsequent sections of this license.

In order to minimize the possibility of error, the number of different mass limits for all of the operations have been set with as few different limits as is possible.

This approach, though somewhat restrictive, is

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a considerable aid to the technical and administrative control of material.

Natural or depleted uranium is exempt from all of the following U-235 mass limit controls. No plutonium and/or U-233 will be handled in the plant.

2. Basic Facility Data

The Sylcor facility is housed in a large manufacturing building and several small buildings on a fenced site in the Village of Hicksville, New York. A plan sketch of the site is shown in Figure 1.

Except for isostatic pressing (Building #12) and some melting (Building #2), all manufacturing operations are conducted in Building #4, which is a ground floor construction, high bay open type structure. With exceptions as specified in subsequent sections of this license application, the building has an overhead sprinkler system installed. The terrain surrounding the facility is essentially flat, and there is no flooding history for this section of Long Island.

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E. Responsibilities

1. Operating Personnel

Operating personnel will have the basic responsibility for following the rules and procedures outlined in Section III-C "Plant Operations Material Control."

Operating supervisors are responsible for educating the operating personnel in these procedures and enforcing them.

2. Accountability Personnel

Accountability personnel (designated accountability representatives) have the responsibility for receiving material, breaking it down into control batch sizes, subdividing as required by manufacturing steps, and storage unit control. They will maintain records of all batch material weighings, counts, and conformance of these to limits of Appendix A.

3. Health and Safety Personnel

The health and safety department has the responsibility for performing periodic inspections to determine compliance with all the procedures of this license and to report to Company management any infractions, as well as to perform the routine monitoring functions specified in Section III "Health and Safety."

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B. U-235 Mass Limits

As a general rule, material is handled throughout the plant as individual "Control Batches." Storage, transfer, shipping, and operations are always less than the limits of these control batches except as specifically defined in High Limit Station (III-C-9) or Special Rules (III-C-8).

The uranium can be at any U-235 enrichment up to fully enriched, unless a specific exception is stated.

1. Limit Table

The maximum U-235 mass limits permitted per control batch are specified in Appendix A.

a. Control Batch

The control batch limit is based on the physical form of the material. Three physical characteristics have been considered in this tabulation:

High void material -- Material having physical characteristics such that at least a 50% void fraction could be readily hypothesized.

Normal or low void material -- Material which is relatively massive in character which would have less than a 50% void fraction.

Finely divided material -- Material of such size that homogenization with an associated high void fraction could be readily hypothesized in the event of an accident.

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b. High Limit Station

A higher limit than that specified for control batch is permitted for those steps where the type of equipment and/or area involved either effectively prevents the entry of water or the nuclear material is in a particular form or held in a particular safe configuration. All of the conditions defined in this license (Section III-C-9, High Limit Station) must be satisfied for each high level operation as specified.

c. Low Limit Station

Those operations in which some dissolution of uranium does occur or can be hypothesized as occurring have been designated as low limit station, independent of the form of uranium going to the station.

2. Safety Factor

The safety factor for prevention of inadvertent criticality has been based on either mass or geometry criteria.

The U-235 limits specified in Appendix A, based on mass criteria, have been selected to provide a safety factor of at least 2.3 when compared with the smallest amount of U-235 that could attain criticality for the form of the material for which such limit is set. These U-235 limits are based, except as noted, on the assumption that the material is fully enriched although lower degrees of enrichment may actually be used.

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High void materials which by their inherent nature would have a high H/U-235 ratio if flooded with water, when not mass controlled on an always safe basis are contained in always safe pans which assume optimum conditions for criticality, and for these optimum conditions have a safety factor of 1.3. In addition to the always safe geometry for these pans, a mass limit is applied which for all normal conditions fulfills the 2.3 mass safety factor above.

In the cases of finely divided material where homogenization could be hypothesized in the event of an accident, an always safe mass limit has been specified.

In the case of soluble steps, in which it can be hypothesized that the material may be flooded and dispersed in a water solution, a mass limit with a safety factor of 2.3 for optimum conditions has been specified.

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C. Plant Operations Material Control

Material in process is controlled by strict batch accountability, the control batch concept being maintained throughout the operating floor of the plant. Batches may be present in only three locations, criticality stations (actual manufacturing operation), in-process storage (between operations) and in transit.

1. Criticality Limit Report

In order to express the U-235 limits specified in Appendix A in terms of the number of pieces (ingots, cores, plates etc.), for ease of criticality control, that may be handled at each operating step, a criticality limit report will be prepared prior to the start of each new job. A sample of such a report is included as Appendix B. This report will show the processing steps which will be performed on the material. (Column 1), as well as the form of the material as it enters (Column 2) and leaves (Column 3) each operating step. The lower U-235 limit applicable to the form(s) of material utilized at each step will also be shown (Column 4), and this limit will be translated into the equivalent number of pieces that can be handled at that step (Column 5). The designation of the job, as well as its order number (which is used for all accounting, accountability, and other references throughout the plant) will also be shown, as will the degree of enrichment. The format of this report may be

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changed from that illustrated in Appendix B provided that at least the same information will be included. The criticality limit report will be prepared by the Production Engineering Group on the basis of the specifications in Appendix A. It will be approved by the Director of Commercial Manufacturing Unit. The report must be accepted by the Supervisor of Commercial Accountability (designating that it has been read and understood) prior to the start of work on the particular order. The safety department will post the criticality report limits in all areas where the special nuclear materials are handled.

2. Control Patch

Control of material quantities will be maintained by moving the special nuclear material in control batches containing not more than the number of pieces specified by the criticality limit report. This material will be initially weighed or counted into the control batches, in accordance with the criticality limit report by a designated accountability representative. The amount of material in a control batch will be changed or scrap removed only by a designated accountability representative.

a. Weighing

In addition to the initial weighing, subsequent weighings to the accuracy demanded by the particular work, will be performed whenever the material is

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processed in such a way that its uranium content would be changed. Records of all such weighings will be kept on forms designed by accountability.

b. Identity of Material

The identity of the special nuclear material will be preserved as much as possible throughout the fabrication process so that accountability records will correspond to particular identifiable pieces of material. By that means, when the material is incorporated in finishing plates, rods, or elements, accountability records will detail the amount of material contained therein and will refer to the specific melt or powder batch, as the case may be, from which that material originated. Whenever practical, this identity will be maintained by actually marking the pieces of uranium or uranium-containing material involved. For instance, ingots, rolled plates, punched cores, and rods may be numbered with a vibrating tool or a stamp. When such material is clad, the cladding will be similarly numbered if possible. In certain instances where it is not possible to number the actual pieces or where the numbering will be obscured by subsequent operating (such as rolling), identity will be maintained by selective positioning of separate pieces in specific positions in the racks in which they are transported or held, as in furnace operation, etc.

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Racks may also bear labels identifying the material contained. In the case of uranium oxide powder, the bottles in which this material is transported will be labeled as to the amount of material and the batch from which it is taken. Subsequent to sintering, uranium oxide will be identified in a manner similar to alloy material.

3. Criticality Stations

The production floor will be divided into distinct criticality stations, each of which will contain at least the machinery and/or equipment necessary for one of the operating steps described in Section II above. The borders of such criticality stations will be clearly marked by paint or tape on the production floor in such a way that the space inside the station will be separated by at least one foot from the space in any other station. Each criticality station will be clearly marked with a code designating whether it is a "high limit," or "low limit" station, when applicable.

*Red
white*

4. In-Process Storage Stations

Material may be stored in "In-Process Storage Stations" on the production area of the plant. These storage stations will be areas outside of the criticality station borders.

Specifications for "In-Process Storage Stations" are given in Section III-0-3.

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5. Carriers

Transfer of loose material throughout the plant will be by tote trays, portable racks or carts, all generally referred to as carriers. These carriers are designed such that water cannot be contained and/or that the geometry assures an "always safe" condition. Further, in order to avoid flooding in the event of an accident, no carriers will be placed directly on the floor of the plant, since flooding of the floor to a depth of a few inches can be considered credible.

a. Carts

Carts used for transferring material within the facility can have a maximum of a 2 inch lip, and hence will have minimum water retention.

b. Tote trays

Tote trays used for loose material such as plates, rods, cores are sized approximately 6"-H x 8"-W x 48"-L or 6"-H x 11"-W x 18"-L which, by virtue of the normal characteristic of the material being carted (its low void fraction), represents a safe condition for the limit set for this category of material. These carriers have a minimum of 3 - 1" holes in the sides not more than 3" from their bottom so that water cannot be contained above this level.

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c. Melt Trays

A special always safe "melt tray" carrier will be used for those operations which have a potential of a high void fraction, specifically solid scrap and melt charge (usually containing a high fraction of solid scrap). The special "melt trays" will have water retention dimensions not greater than

3"-H x 11"-W x 16"-L or 3"-H x 8"-W x 48"-L.

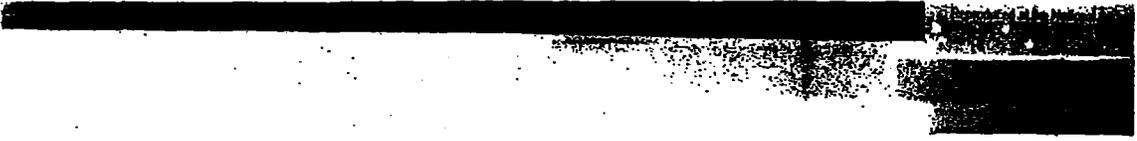
d. Racks,

Except for racks, the carrier approach tends to minimize the void fraction of the material in process as no spacers are used which would tend to separate the fuel. Certain process steps which as furnace heating, which require gas circulation around the fuel, necessitate the use of holders which do tend to optimize to a greater degree the reactivity of the fuel. Such racks will therefore be made from wire or bar type stock in such a fashion as to completely exclude the possibility of water retention due to credible accidents (hose, sprinklers, pipe breaks, etc.) Racks will never be used directly on the floor of the plant or in closed volumes which might become flooded.

5. Operating Rules

All operations performed in normal stations will be subject to the following operating rules:

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1/15/62

- 
- a. Never will more than one control batch be permitted in a criticality station at one time, except as specifically provided in Section III-C-9, High Limit Stations.
 - b. The contents of the control batch may be worked on only within the physical boundaries of a criticality station.
 - c. In criticality stations only a single type (one job) of material may be present in the station at one time.
 - d. No operation may be performed which would change the form of the material to a form which would reduce the criticality limit of the control batch below its initial mass limitation. If the form of the material must be so changed, the control batch must be readjusted to the lower value by a designated accountability representative prior to the operation.
 - e. It is required for operations which generate scrap that this scrap be handled in a "pail tray."
 - f. Carriers will not be stacked in criticality stations.

7. Transfer Rules

All transfer of materials between criticality stations, storage stations, etc., will be made in accordance with the following transfer rules.

- a. Maintenance of only one control batch in a station is provided by the regulation of -- Transfers to and

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- from a station may be made only by the designated operator of that station.
- b. Prior to fuel assembly, material will be brought to/er removed from a criticality station only as a single control batch.
 - c. In criticality stations prior to fuel assembly, all of the original contents of the control batch (including the scrap generated by the operations, but not including nominal process losses) will be removed from the station before a second batch is brought into that station.
 - d. At no time can more than one carrier containing materials be transferred by an individual.
 - e. After the uranium shapes have been bound together into a fuel assembly, the movement to or from criticality stations does not necessarily require the use of carriers.
 - f. In criticality stations handling fuel assemblies, transfer to and from the station of single fuel assemblies is permitted but at no time can the number of fuel assemblies within the station exceed that number specified for a control batch in the criticality limit report.
 - g. Transfers to and from high limit stations are permitted only as normal limit control batches, except where not possible because of the form of the material. This

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regulation assures that any accidents during transfer will involve only a normal amount of material. Further, with multiple carriers in a station, the station status will be apparent to all supervisory and operating personnel.

8. Special Rules

Exceptions and/or limitations for the above operating and/or transfer rules will be made in the following cases where by virtue of the specific circumstances involved special rules are required.

a. Hot Rolling

The rolling mill and heating furnaces are separate criticality stations. In order to perform the necessary process steps, material must be transferred between those two stations in less than full batches. To assure criticality safety when such interstation transfer is necessary, only one piece of nuclear material at a time will be transferred from the furnace to the mill.

In order to make effective use of the rolling mill, it is desirable that more than one control batch be present in the furnace at a given time. This control batch size is limited at the furnace criticality station if the total mass of the control batch is less than

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than that defined in Appendix A. The furnace is of a flat hearth type having no water cooling, and hence flooding is not considered credible.

b. Melting

Melting operations in the plant are performed in two types of induction heated furnaces; the first, an open air melt furnace and the second, a completely enclosed controlled atmosphere or vacuum furnace. Both of these furnaces have internal water coil cooling, but are in an unsprinkled area. Although the unnoticed rupture of the water cooling coils is extremely unlikely, such an occurrence has been analyzed. In order to assure an always safe condition, the crucible size will be limited to the following maximum dimensions:

6 inch inside diameter and 15 inch high. These crucible dimensions assure an always safe geometry even when optimally moderated and fully reflected.

*Request
for
justification*

The melt charge, as indicated in Appendix A, must be carried in an always safe melt tray.

c. Soluble Stations

Chemical Cleaning -- Those process steps in which it is possible to hypothesize the solubilization of uranium in water must be under careful control. In those steps where uranium-containing material is

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immersed in caustic or acid solutions which could dissolve uranium (soluble steps), every effort will be made to insure that the solution does not etch deep enough to dissolve any of the uranium. If the clad material is etched away and clad penetration is noticed when the material is removed from the solution, an analysis of the solution will be made to determine the amount of dissolved U-235 before any further etching is performed. When in use, all caustic and acid solutions used for etching will be checked daily for traces of U-235. Upon detection of U-235, quantitative analysis will be performed and if the concentration is greater than 10 grams per liter or the total uranium contained is greater than 100 grams, the solution will be removed from operations for proper disposal.

not very clear

*See section Table 1 of T10-1
made this in just a prohibited situation therefore max U-235 may exceed 100g/liter all vol section is after*

Chemical stripping -- Chemical stripping requires that the cladding be removed by dissolution until uranium "meat" is exposed. To assure that significant quantities of uranium have not been dissolved, the following procedures are to be followed:

1. The plates in and out of the dissolution tank are counted and recorded. A discrepancy requires that a quantitative analysis be done prior to further dissolution.

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2. Each plate is visually examined and if significant uranium is exposed, a quantitative analysis must be performed.

3. After every 2 Kg of contained U-235 has been processed through the dissolution tank, a quantitative assay must be performed.

4. If the concentration of uranium is greater than 10 grams per liter or the total uranium content is greater than 100 grams, the solution will be removed from operations for proper disposal.

d. Single Plate Transfer

It is necessary from many manufacturing steps to transfer a single component of a batch, e.g., a single plate, from a criticality station to another location to perform tests, do inspection, sample, etc. Such individual transfers to and from a criticality station are permitted in less than full control batches.

9. High Limit Stations

The following tabulation defines those conditions (for the specific stations considered) which must be satisfied to make use of the higher U-235 mass limits than permitted in the control batch tabulation of Appendix A.

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a. Uranium Oxide Powder Weighing

Uranium oxide is received in criticality approved carriers containing up to 10 Kg of U-235. It is necessary to weigh the uranium oxide into normal station batches before manufacturing operations can begin. This weighing will be performed in an accountability weighing station which is in an unsprinkled area of the plant.

The total material shipped in the bird cage is contained in several plastic bottles, the largest of which holds 5 Kg of U-235. The weigh station will contain only one of the plastic bottles containing uranium which will be open only during the actual weighing operations. Unused material in the sealed bottle will be returned to the bird cage for storage. Immediately after weighing, each normal batch will be removed from the weighing station.

b. Solid Scrap, Fines, Chip Storage

This category of material (finely divided) is mass limited in all normal stations. After weighing and accountability check, as defined and controlled in Shipping - Scrap (Section IV-E), the material may be placed in the shipping container up to the defined limits of that container.

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c. Received Material Storage

Material received in approved shipping containers may continue to be stored in those containers provided no other material is placed within the container and/or its bird cage. Material which is removed from the container will conform to the limits specified in Storage (Section III-D).

d. Pressed Uranium Oxide Compact Sintering

Uranium Oxide - stainless steel powder compacts, after pressing, are sintered in a controlled atmosphere furnace.

The furnace used for the sintering operation is not water cooled and has a flat hearth. Therefore even if sprayed with water in the event of an accident, water will not be contained.

It is unlikely that 1 Kg of U-235 when mixed with stainless steel could be made critical under the most optimum conditions and as a compact, a credible criticality accident cannot be hypothesized for this operation.

e. Tightly Packed Plate Annealing

In order to increase the capacity of annealing furnaces, it is desirable to handle more than one control batch in a furnace. These furnaces are of a flat bed non-water cooled type.

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The plates will be tightly clamped together in not more than 5 bundles so that the H/U-235 ratio even if flooded would be small (less than 10/1). This ratio permits a total mass limit of 5 Kg U-235 in the furnace.

f. Hot Ingot Rolling

The mass limitation in the hot ingot rolling operation, by virtue of the relatively massive form of the uranium alloy, can be substantially greater than that in other sections of the plant. Such an increase is also desirable from a furnace capacity standpoint.

Up to 3 control batches of uranium aluminum alloy are permitted at the hot ingot rolling station.

The total number of individual pieces in the station are limited to 6 and the minimum thickness of any piece must be greater than 1/10 inch. The furnace is a flat hearth type; therefore, flooding is not considered credible and, even if flooded, the massive characteristics of the material would prevent criticality.

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D. Storage

1. General

All storage, both accountability and in process, at the Hicksville plant, will be on a unit basis with each unit having no more than the amount of U-235 specified for the "Maximum Control Batch - Appendix A" for the specific type of material. Spacing will be maintained as described below for each storage facility used.

Storage racks in the plant will be of two general types; separated or continuous shelving. For both types, there is at least 8" of clear space between each storage unit and the next adjacent unit. For continuous shelves, spacing will be maintained by clearly visible markings outlining usable positions. The space between these positions will be clearly marked so that personnel will know that such space may not be used for storage. On either type of shelf, material may be stored in carriers, in other suitable containers, or without containers, at the discretion of the cognizant personnel. In cases where material is received in approved bird cages in higher amounts than are allowed for storage in Appendix A, this material may continue to be stored in the bird cages provided that the internal container is sealed and that no other special labeled material is stored within the framework of the cage.

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2. Storage Unit Limit Criteria

The number of units in all of the storage areas of the facility are set in accordance with Figure 22, or Table V of the Nuclear Safety Guide, 1961, TID-7016, Rev. 1, for the applicable reflector condition. In conforming with Appendix A, the reactivity of each unit is less than that required for application of these data.

3. In-Process Storage

a. General

In-Process storage stations are located in a number of positions in the production area of the plant with a one foot minimum clearance to criticality station boundaries. Between manufacturing steps (criticality stations) material is temporarily stored in these storage stations. The production floor is in a large open type building with no major reflecting walls or roof. Temporary partitions which have been used in a few locations, are constructed of sheet metal or light plasterboard. Hence, a nominal reflector criteria may be used to establish the maximum units for in-process storage stations. A minimum of 8 inches spacing between the contents of adjacent units in each storage station in both the horizontal and vertical directions is maintained by the structural nature of the storage rack.

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Approved by the Board
[Redacted]

b. Cubic Arrays

In cubic arrays (apparent centers defined by three coordinate axes) the storage volume per unit not including the 8" clear space is not less than 2 ft.³/storage unit. A single cubic array storage station will not contain more than 48 units.

04

Arrays are isolated if separated by the larger of two quantities; the largest dimension of the array excluding diagonals or 12 feet.

c. Plane Arrays

Plane arrays (apparent centers defined by two coordinate axes) will have a minimum center to center spacing of 22" and will not contain over 70 units. Associated but not isolated planes, separated by a minimum of 7.5 foot free space between planes, will not contain a total of more than 140 units.

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20
25
28

10
100
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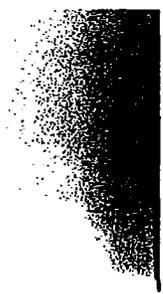
Arrays are isolated if separated by the larger of two quantities; the largest dimension of the array excluding diagonals or 12 feet.

4. Accountability Storage

a. General

All material received and stored other than "In-Or-Use Storage" is handled in the "Accountability Storage Station". All of these storage facilities will be equipped with combination lock or key lock with access only by accountability and the guard force. Limits for these storage areas are as defined above.

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All accountability storage arrays will be separated from other storage arrays by the larger of two quantities; the largest dimension of the array excluding diagonals or 12 feet.

b. Vault

The vault, a concrete structure, is located adjacent to the production area in the manufacturing building. Its size is 20 x 24 x 8 feet. In accessing the number of units which may be stored, a close fitting reflector and a single array criteria has been assumed. The shelves and aisle spacing are such that the storage volume associated with each unit is 12.4 ft.³. The maximum number of units in this array is limited to 100.

c. Long Term Storage Area

This wire caged storage room is located on a mezzanine adjacent to the production area in the southwest corner of Building #3. Its size is 25 x 25 x 7 feet. The roof and 2 outside walls are of light metal construction, hence the room may be considered nominally reflected. The storage racks have a usable volume of 6 ft.³. The maximum number of units in this array is 120.

d. Storage Building

A separate building on the site will be utilized for storage.

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This building is of steel frame construction sheathed in windowless galvanized corrugated steel and is erected on a concrete slab. It will be approximately 18 x 24 feet with a clear inside height of about 8 feet. It is erected at least 40 feet from any other building in which SNM is stored or handled. This building has no sprinkler system. The minimum unit storage volume in this building is 5 ft³ (usable volume 18" x 24" x 20") and the maximum number of units will be 100.

Analysis
possible
Structure

e. Future Storage

All future storage stations will conform to free space and array separation criteria and administrative control above and will not contain less than 5 ft³ per storage unit. The number of units in an array is limited to 50 for a reflecting room or 100 for a non-reflecting location.

AC
mount
offices

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1/15/62

Appendix A

Criticality Station Limit -- U-235

<u>Material Specification and/or Operation</u>	<u>Kg of Contained U-235</u>	
<u>I. Maximum Control Batch</u>		
<i>kg pounds</i>		
<u>High Void Material</u>		
a. Melt Charge (handled in melt tray)	2	1 3
b. Solid Scrap (handled in melt tray)	2	1
c. Fuel Assemblies	1	
<u>Normal or Low Void Material</u>		
a. Unalloyed uranium metal (>89% U-235, >50g/piece)	5	
b. Ingots (slab, Rod, Buttons, Derbies)	2	
c. Slabs	2	
d. Punched Cores	2	
e. Picture Frames containing Cores	2	
f. Plates Containing Cores	2	
g. Uranium Oxide Pressed & Sintered	2	
h. Uranium Oxide Pellets pressed & Sintered	2	
<u>Finely Divided Material</u>		
a. Uranium Oxide Powder	0.33	
b. Uranium Oxide Powder - Unsintered	0.33	
c. Fines, Chips, Turnings	0.33	
<i>Crucible residue</i>		?
<u>II. High Limit Station</u>		
a. Uranium Oxide Powder Weighing	5	
b. Solid Scrap, Fines, Chips Storage	3.6	
c. Received Material Storage	(*)	
d. Pressed Uranium Oxide Compacts Sintering	1	
e. Tightly Packed Plates Annealing	5	
f. Hot Ingot Rolling	6	
<u>III. Low Limit Station (Solute Operations)</u>		
a. All Material	0.33	

Material received in approved shipping containers may continue to be stored in those containers. When removed, it must conform to storage limits defined in this license.

IV. Shipping

A. General

In addition to shipments specifically allowed in Part 71 of Chapter 1 of Title 10 of the Code of Federal Regulations, Sylcor will make shipments of special nuclear material in accordance with the specifications and procedures set forth in the following paragraphs of this section. These shipments may be made from Sylcor to either AEC stations, AEC contractors, or other licensees.

W-A
1/15/69

B. Raw Material

Raw material uranium metal and/or uranium oxide will be packed in criticality approved 20" bird cages containing no more than 10 kilograms of U-235 each. The inner container with the uranium metal will be sealed with a waterproof gasket. Uranium oxide will be further contained in sealed polyethylene bottles. A shipment may contain several birdcages provided that the total amount of U-235 will not exceed 30 kilograms.

IV35
1/15/62

C. Solutions

Uranium and uranium alloys which have been dissolved will be packed in 2 S polyethylene liners within sealed 5-gallon drums which are, in turn, sealed inside 15-gallon drums. These drums will meet ICC 5B or 6J specifications. Uranium and uranium alloys dissolved in HNO_3 will be neutralized and the neutralized solutions packed inside vinyl bags inside sealed drums of ICC 17H specifications which are, in turn, sealed inside larger 17H drums. In the case of either type of solution, the space between the inner and outer drums will be packed with vermiculite. Each container as thus described will be limited to 190 grams of contained U-235 and the solutions will have a maximum concentration of no greater than 10.0 grams of U-235 per liter. By virtue of these limitations, no spacing or stacking procedures need to be observed. Each shipment will be limited to 10 kilograms of contained U-235.

OK

IV-D
1/5/62

D. Fuel Elements

Fuel elements will be shipped in one of two standard containers: a) a steel coffin, or b) a drum-type birdcage. Limits and restrictions for each container are given below. Fuel element shipment will be by common carrier. The maximum number of units in shipment will be limited to that defined in Tables D-1 or D-2 below. Additional units will not be shipped until notice of arrival is received.

1. Shipping Coffin

The coffin, shown in Sylocc Drawing #E-30125, is constructed of 14-gauge steel and has outside dimensions of 19" in width, 15 $\frac{1}{2}$ " in height, and 5'6" in length. Each coffin will contain up to six elements, arranged in two rows of three elements each.

In order to insure the nuclear isolation of the elements in any coffin from those in any adjacent coffin, two measures are taken. First, there are holes in the coffin to allow the flow of water into it in case of any flooding accident. Further, the elements will be supported rigidly within the coffin so that there is a minimum of 1" between the top or bottom of each element and that of the coffin, and a minimum of 1" between the outside of any element and the coffin in the other directions; thus, there would be a minimum of 3" of water between the elements of adjacent coffins.

IV-D-1
1/15/62

The U-235 limits in a fuel element (fuel assembly) which will be considered safe are dependent upon the length of the fuel bearing section and its water (void) fraction: In addition to the length criteria, the U-235 content of fuel elements may be increased if a 0.020" cadmium plate is placed between the two rows of three elements. The cadmium plate between the two rows must cover the total fuel bearing area.

The maximum number of units (coffins) have been set based on the fuel element storage volume in the coffin as well as the U-235 content.

The following table (IV-D-1) summarizes the U-235 mass limits for the shipping coffin.

2. Shipping Drum

The drum-type birdcage, detailed in Syloco Drawing #D-32242 is constructed of a standard 55-gallon drum within which a 12" diameter cylinder is supported by metal spacers. When length greater than that of a standard drum is required, an additional section may be welded onto the basic unit. Four elements, each inserted in cardboard tubing and then supported within the 12" diameter cylinder, may be shipped in each birdcage.

As with the coffin, holes in the walls of the drum and the 6" difference between the 12" radius of the drum and

IV-D-(1-2)
1/15/62



the 6" radius of the cylinder insure the isolation of the nuclear material in case of flooding.

The maximum U-235 content in each coffin or birdcage is conservatively calculated to keep the group of elements 10% subcritical under conditions of full water moderation and reflection. Allowable loadings will vary with the length and composition of the elements. The maximum number of units (drums) have been set based on the fuel element storage volume in the drum as well as the U-235 content.

The following table (IV-D-2) summarizes the U-235 mass limits for the shipping drum.

IV-D-2
1/15/62



TABLE IV-D-1

SHIPPING COEFFICIENT MAXIMUM U-235 LIMITS

Notes: Maximum of 6 elements/coffin.
Water Fraction of elements to be less than 75%^{**}
Maximum number of coffins in shipment - 12

<u>Active Fuel Length Inches</u>	<u>U-235/Element No Cadmium Divider (Grams)</u>	<u>U-235/Element 0.02% Cadmium Divider (Grams)</u>
30	240	180
35	270	170
40	310	180
58	450	270

* See Drawing 44-20125

** For Fuel Elements having higher water fraction, the U-235 limit is 1/2 that tabulated.



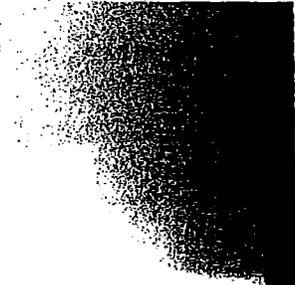
TABLE IV-D-2

SHIPPING DRUM* MAXIMUM U-235 LIMITS

Notes: Maximum of 4 elements/drum
Water fraction of elements unlimited
Maximum number of drums in shipment - 15

<u>Active Fuel Length Inches</u>	<u>U-235/Element GMS</u>
24	260
30	310
40	430
58	580

*Nuclear Drawing FD-32212



B. Solid Alloy Scrap

1. Uranium-Aluminum (> 89% enriched uranium), alloy scrap, chips, turnings, melt dross, crucible skulls, etc., will be packed in a 5", Schedule-40 pipe. The I.D. of this pipe is 5.047" having a length of approximately 35" with a welded pipe cap bottom and a bolted and gasketed flange top. The pipe for shipment will be centered in a standard 55 gallon drum (ICC specification 5B or 6J). This shipping container is shown in Sylcor drawing #D-32665. The 55 gallon drum will be drilled with four 1" holes within 2" of both the top and bottom flange (8 holes total), thereby permitting water to leak into the drums and preventing interaction in the event of flooding. By virtue of the drum dimensions, sufficient spacing is provided between individual subcritical drum assemblies so that no further spacing procedures need be observed. Even if flooded with water, the holes in the drums will permit water to surround the central tube with sufficient thickness to preclude any interaction between drums.

Before batches of scrap are placed in this pipe, the U-235 content and total weight of a batch will be established. It is required that the mass of U-235 be less than 10% of the total batch mass. By this check, it can be guaranteed that the maximum quantity of U-235

11-11-65
1/10/65



will be less than 1 g/cc of solid material. The total U-235 mass limitation is 3.6 Kg per 5" pipe. Each total shipment of this material will be limited to less than 180 Kg.

storage limits

*7-2-50
493
1-1-51
1-1-51*

Multiple drum shipments will not be stacked so that only one plane of drums will exist.

*angle from tripod w.
Do not stack*

2. Uranium-Aluminum (25% enriched uranium)

The container is as (E.1) above, but the loading limit is as follows. Before batches of scrap are placed in this pipe, the U-235 content and total weight of a batch will be established. It is required that the mass of U-235 be less than 10% of the total batch mass. The total U-235 mass limitation is 2 Kg per 5" pipe. The maximum shipment is limited to less than 100 Kg U-235.

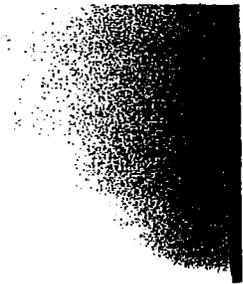
*D-326
D-326*

S Oars - 41 -

Handwritten notes, mostly illegible.

Handwritten notes, including "1/35/52".

Handwritten notes, including "100 lbs".



V. Outside Work

A. Nondestructive Work by Outside Vendors

Uranium-containing material may on occasion be inspected tested and worked on by nondestructive means (for example, ultrasonic testing and X-raying) at the facilities of outside non-licensed vendors. These operations will be performed in accordance with the following procedures:

1. Uranium and uranium-containing alloy will be completely clad in aluminum or other cladding material and no operation will be performed which could result in any of the uranium being removed from the clad.
2. Work may be performed by Sylon personnel or the vendor's personnel, but will in any case be under direct supervision and control of competent Sylon technical personnel.
3. The amount of uranium provided to a vendor for the purposes contemplated by this section will be less than 500 grams of contained U-235 at one time. There will be no other special nuclear material present at the vendor's plant at the time when this work is performed.
4. No overnight storage will be allowed at the vendor's facility. The uranium will be returned to Sylon's plant where it may be stored.
5. Shipments in and out will be made in accordance with regulations of this license (Section IV).

V-A-(1-5)
1/15/62

VI. Health and Safety

A. General

All operations in the plant will be controlled and monitored so that the radiation limits and exposure will be maintained below those specified in Part 20 to Chapter 1 of Title 10 of the Code of Federal Regulations.

Safety Procedures have been written for normal as well as emergency conditions and are periodically reviewed with the operating staff.

VI-A
1/15/62

B. Personnel Safety

1. Safety Instructions

Each new employee attends a training session exclusively on general safety and nuclear safety. This is given by the Safety Department. Periodic nuclear safety training sessions are conducted by the Safety Department.

2. Protective Clothing

Personnel handling radioactive material will wear protective clothing (gloves, aprons, laboratory coats, work uniforms, safety glasses, chemical goggles, shoe covers, etc.) as required depending on the operation performed and the degree of the hazard as determined by the Health and Safety Department. Respiratory masks, face shields and asbestos gloves are available for emergency use. All protective clothing is processed by a laundry facility having an AEC special nuclear material license.

3. Monitoring

Film badges are supplied bi-weekly to all personnel exposed to radioactive materials where the external exposure is or is likely to be greater than 25% of the maximum permissible level for a week, and to any personnel who operate radiation-producing equipment (x-ray or fluoroscope units), or who work for the

NY-2- (3-2)
1/15/62

accountability, inspection or melting sections. Every employee will receive a complete physical examination every eighteen months.

4. Eating Prohibited

Eating any type of food will be strictly prohibited in radiation work areas. Smoking will be prohibited while handling or processing unalloyed unclad, radioactive materials and in work areas where such materials are being processed.

C. Facility Safety

1. Surveys

Bi-weekly surveys will be conducted of all areas for radioactive material contamination. These surveys will be conducted with a portable alpha survey meter.

In addition to these routine surveys, additional dust surveys will be performed on any new or changed operations which may involve exposures to dust or radiation. These surveys will be conducted with a vacuum pump and Whatman No. 41 filter paper or equivalent. The analysis will be conducted in an alpha gas proportional flow counter. In addition, complete dust and radiation surveys as well as urine analyses will be conducted if a fire or other incident occurs which might involve unusual exposure.

2. Ventilation

Operations which involve toxic or radioactive materials and which produce radioactive dust, fumes, mists or gases (such as melting, machining, etc.) will be performed only under adequate ventilation. Such equipment will be enclosed at the source of generation and connected to exhaust systems which are suitably filtered. Environmental air sampling is conducted throughout the plant in accordance with the regulations specified in Part 101, Title 10, CFR.

VI-C-(1-2)
2/15/52

3. Criticality Alarm

All areas in which enriched uranium is processed or stored are continuously monitored by gamma radiation detection equipment which will sound an alarm in the event of a criticality accident. This equipment is as manufactured by the Victoreen Instrument Company or its equivalent and consists of:

- a. One (1) model 712 basic control unit (power supply)
- b. Two (2) models 713 auxiliary chassis
- c. Eleven (11) model 715B plug in stations
- d. Eleven (11) model 716A sensing elements
- e. Twelve (12) warning lights
- f. Five (5) Grouse Hinds #WH13931 warning horns

Items a, b, and c, of the above are installed in the main guard house. There is a man on duty in this guard house twenty-four hours a day, seven days a week. One of his responsibilities is to keep the radiation alarm under constant surveillance. Each plug-in station is equipped with a buzzer and light which are activated if the radiation field of one of the sensing elements exceeds 15 mrem/hr.

The location of the sensing elements, warning lights and horns are distributed throughout the plant. When one of the sensing elements is exposed to a gamma field greater than 15 mrem/hr, the warning light or lights in its vicinity are activated. The warning horn is a blue colored globe.

VI-9-3
1/15/52

and flash on and off in order to attract attention. All of the horns in the manufacturing building and its vicinity are activated if any one of the sensing elements in the vicinity are activated.

Each sensing element is equipped with a solenoid and a strontium 90 source. Once a week the guard in the guard house pushes a button on each of the plug-in stations and recalibrates each unit. The alarms and warning lights are also checked out at this time. -

4. Fire Control

All work areas are protected by an automatic sprinkler system, except where specifically noted in other sections of this license for special nuclear safety considerations. Fire alarm stations are immediately accessible for reporting fires in the buildings. Sycor has a fully equipped and trained emergency control group organized for fire fighting and such services as is incident to fighting fires, explosions, or other emergencies.

a. Flammable Liquids

All flammable liquids will be stored in a remote building or in approved non-flammable metal cabinets. In processing operations, all flammable liquids will be contained and handled in approved safety cans.

VI-C-(3-A)
1/15/62

b. Flammable Gas

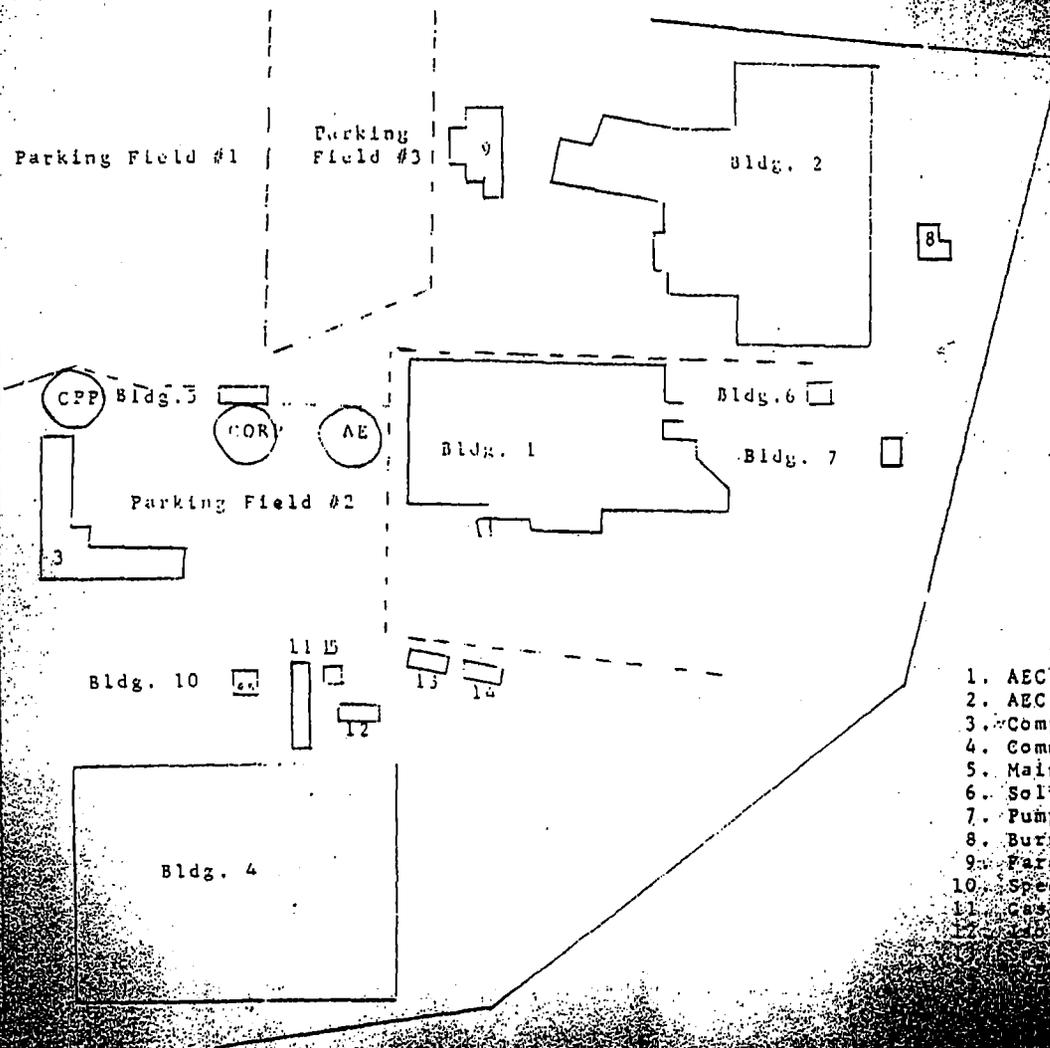
Areas where hydrogen gas is used will be monitored by a continuously operating combustible gas alarm system.

5. Powder Operations

The following additional procedures will be utilized on processes involving uranium oxide in the form of powder or unsintered compacts.

- a. Such operations will be performed in either dryboxes, hoods, furnaces, or sealed canisters.
- b. All dryboxes and furnaces used for such work will be ventilated, and the air passed through a filter. This filter will be removed at the end of each job and submitted to accountability.
- c. Neither powder nor unsintered compacts will be handled with bare hands. During most operations these will be handled with forceps or through the rubber gloves of the dryboxes.
- d. At the end of each job all dryboxes and furnaces will be thoroughly cleaned to remove any powder. The uranium oxide process leaves no visible powder in dies, dryboxes, etc. that cleaning is not necessary during a job. The process, however, will be surveyed periodically by the Health and Safety Department to check this point. Air sampling and portable alpha monitoring instruments will be used for that purpose.

VI-1-(4-5)
1/13/62



MUSTER AREA

- CPP COMMERCIAL FACILITIES
- ◻ COR CORPORATE FACILITIES
- ◻ AEC AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage.
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage.
11. Gas Storage.
12. Gas Storage.
13. Gas Storage.
14. Gas Storage.
15. Gas Storage.

APPENDIX B

CRITICALITY LIMIT REPORT

Page 1 of 2

No. _____
Designation: _____

FOR SNM 82

Fuel Plates

Cores

Process Step	Form Incoming	Form Outgoing	Lower Limit	D-235 Per Plate
Melt Charge	Raw Material	Raw Material	2000 g	Std Cont Part
Cast & Casting	Raw Material	Ingot	2000 g	Std Cont Part
Rolling - Hot	Ingot	Slab	2000 g	Std Cont Part
(Ingots allowed in Furnace during pre-heat)				
Rolling - Cold	Slab	Slab	2000 g	Std Cont Part
Core Punching & Machining	Slab	Core	2000 g	Std Cont Part
Cleaning - Vapor Degrease	Core	Core	2000 g	Std Cont Part
Core & Cover Assembly	Core	Pack	2000 g	Std Cont Part
Rolling - Hot	Pack	Plate	1000 g	Std Cont Part
(Plates allowed in Furnace during pre-heat)				
Rolling - Cold	Plate	Plate	1000 g	Std Cont Part
Annealing - Blister	Plate	Plate	4000 g (Furnace Only)	Std Cont Part
Fluoroscope	Plate	Plate	1000 g	Std Cont Part
Shear, Blank and/or Form	Plate	Plate	1000 g	Std Cont Part
Cleaning - Acid	Plate	Plate	330 g	Std Cont Part

APPENDIX B

CRITICALITY LIMIT REPORT

Page 2 of 2

Designation:

FOR SNM 82

Fuel Plates

Total

Process Step	Form Incoming	Form Outgoing	Limit	Unit	Part
Partial Standard Control					
Production	Plate	Plate	1000 g	Std Cont Part	
Final Inspection	Plate	Plate	1000 g	Std Cont Part	
Assembly Preparation	Plate	Fuel Section	1000 g	Std Cont Part	
Assembly - Mech. of Base	Fuel Section	Fuel Section	1000 g	Std Cont Part	
Cleaning - Water	Fuel Section	Fuel Section	1000 g	Std Cont Part	g sections
Cleaning - Acid	Fuel Section	Fuel Section	330 g	Std Cont Part	g sections
Machining	Fuel Section	Fuel Section	1000 g	Std Cont Part	g sections
Cleaning - Vapor	Fuel Section	Fuel Section	1000 g	Std Cont Part	g sections
Component Welding	Fuel Section	Fuel Element	1000 g	Std Cont Part	g elements
Bench	Fuel Element	Fuel Element	1000 g	Std Cont Part	g elements
Engraving	Fuel Element	Fuel Element	1000 g	Std Cont Part	g elements
Anodize or alodine	Fuel Element	Fuel Element	330 g	Std Cont Part	g elements
Final Inspection	Fuel Element	Fuel Element	1000 g	Std Cont Part	g elements
Packaging	Fuel Element	Fuel Element	1225 g	Std Cont Part	g elements

PREPARED BY

APPROVED BY

H. E. DICK

ACCEPTED BY

DATE

SYLVANIA ELECTRIC PRODUCTS INC.
SYLCOR DIVISION
COMMERCIAL FUEL PLANT

JOB ORDER LOG

H. A. Gannon

SYL00051975

COMMERCIAL PLANT FOR LOG

Order No.	Customer	Customer P.O. #	SKU Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3538	U. OF CALIFORNIA	4634603		10 TUBE ASSEMBLIES @ 24200. 1 Extra Elem 7118 7891.00	24200.	1/65-3/66	2,452	2420	(32)
3539	SWEDEN	55347		12 CONTROL ROD ELEM	713 10692.	11/65-2/66	12,841	11405	(1,436)
3600-1	PHILLIPS PETROLEUM	76028		1 PR ATR SIDE PLATES	249	1/66	-	249	249
3600-2	PHILLIPS PETROLEUM	7202		3 SETS ATR SIDE PLATES	748	2/66	-	748	748
3600-3	BROOKHAVEN	093518		100 GAS Y METAL	125	3/66	500	125	100
3600-4	GENERAL ELECTRIC, LAB	45953		WELD (3) NO TUBINGS	41	3/66	42	41	(1)
3600-5	"	"		SERVICE DIGEST PRESS.	44	3/66	33	44	(3)
3600-6	"	"		WELD SAMPLE CONTAINER	N/C	"	"	"	"
3600-7	"	"		"	43	6/66	76	43	(7)
3601	BROOKHAVEN	079659		9 VS AGR ELEM @ 87.62	819.49	1/66-7/66	80,202	84641	4439
3602	FALL CORP	22987V		ROLLING TIME @ 1750 RPM	782	1/66-2/66	536	782	246
3603	NUMEC	M2162ARK		PRESSURE BOND CYLINDER SUPPLIES	725	2/66	294	725	431
3604	G.E.	205- 58412W		100 UAL RODS	3500	2/66-3/66	1,165	3500	3,035
3605	SONOTONE	16834		ROLL PLAQUES	121	2/66-3/66	98	121	23
3606	SWEDEN	55357		+3 STD ELEM @ 925.00 40 STD FUEL PLATES 500 # NICKEL ROLLED	2775 37000	2/66-5/66	32957	39775	6818
3607	FALL CORP	722935		500 # NICKEL ROLLED	1750 HR 773	2/66-6/66	456	773	317
3608	SONOTONE	18002		ROLL PLAQUES	1843	1/66-3/66	1,789	1843	54
3609	CERCA	GMFA 3701		CERMET COAKS (20)	840	3/66	242	840	598

COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SNM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3524	BROOKHAVEN	067500		200 GR. U METAL 93%	130	8/65-9/65	35	130	95
3525	ARGONNE	31-109-38 -1833		5 SM-1 TYPE FUEL PLATES	6,509	8/65-11/65	3302	6509	3207
3526	ISRAEL	GAP 79 8005/8101-51		10 STD FUEL ELEM	13,607	8/65-11/65	12363	13607	1241
3527	AMES LAB-IOWA STATE	AL-1482		60 FUEL ELEM ^{+3 ELEM}	+1,830 54,752	7/65-1/66	52442	56582	4140
3528	GEORGIA INST OF TECH	3-1203235		CANCELLED 2/66 1 U CONVERTER PLATE	3306	9/65-2/66	10396	-	(10396)
3529	PHILLIPS PETROLEUM	C-259		1 SET PINS + COMB 2 SETS SIDE PLATES	PART OF ORDER 3424				
3530	AUSTRIAN EMBASSY	70,889/65		FUEL PLATE 126AU-235	75	12/65	-	75	75
3531	GENERAL ELECTRIC	205-V5077H		MODIFY 2 GETR CONTROLS	1490	12/65-7/66	1241	1490	249
X 3532	IBM SYSTEMS MFG DIV	A11189 LO A9905		LAMINATE MATERIAL 200 LBS	3,000	11/55-8/66	2523 C + NCE	-	(2523) LED
3533	AUSTRIAN EMBASSY	41,038-65		20 GMS U METAL FOIL	200	11/65-3/66	1377	200	(1177)
3534	U. OF MISSOURI	22496		1 FUEL ASSY ^{TO BE SHIPPED WITH ORDER 3432}	2975	12/65-2/66	858	2975	2117
3535	MAGNETIC DIALECTRICS	13611		150 STATICALLY PRESS MATERIAL	630	11/65-1/66	894	630	(264)
3536	U. OF CALIFORNIA	4634603		40 STD ELEM @ 815 u	32,600	11/65-3/66	34987	32600	(2387)
3537	" " "	"		10 SPECIAL ELEM @ 723 u	7230	11/65-3/66	6857	7230	373

SYL00051978

COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SMM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3510	DuPont SROO	AX161823		HWOCTR Prepar est. to produce fuel	2,175	5/65-6/65	1977	2175	198
3511	Argonne Natl. Lab.	491559		Samples 12 Control Rod Corrosion	1,014	5/65-6/65	1076	1017	(32)
3512	Mitsui & Co. Ltd.	184512		1 DUMMY ELEM 472 CREDIT HALF PRICE ON ONE (372) 25 Dummy Elem.	19,650	6/65-11/65	18,722	19157	735
3513	Reactor Institute			10 Fission Plates	2,475	6/65-10/65	1937	2475	571
3514	Argonne Natl. Lab.	496313		3 Control Rod Blades	14,850	4/65-9/65	8,306	14,850	6547
3515	Grumman	8-50060 8-91763		Rolling Mill Time 22.50/hr.	3,576 1,877	5/65-2/66	2,877	3,576	699
3516	Sweden	S 53748		Rebuild (4) & Rework (2) Elem	1,850	4/65-9/65	3026	1850	(1176)
3517	Sweden	S 53747		Reprocess 3 Elem.	900	9/65	-	900	900
3518	I R L	03258		Reprocess IRL Fuel Assembly	378	6/65-9/65	.19	378	359
3519	General Electric	205 - W9000H		110 Std. GETR Elem.	128,480	6/65-7/66	129925	128480	(1445)
3520	General Electric	"		30 Control Rod GETR Elem.	+1780 26,700	4/65-7/66	29714	28480	(1234)
3521	SUMITOMO	8A-XPT 10470	506-1	Fabricate U/Al Fuel Discs	3,537	7/65-8/65	862	3369	2507
3522	N A S A	NAS 3- 8108H	504-3	10 Columbiu UO ₂ Plates	12,212	- CANCELLED -			
3523	N A S A	"	506-1	10 Molybdeum UO ₂ Plates	12,213	- CANCELLED -			

SYL00051979

COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SNM Code	Description	Contract Price	Period of Performance	Wgt. Cost	Selling Price	Gross P (L)
3449	Fall Corp.	14015		17.50/man hr. Roll & Test Nickel Sheet	OPEN not exceed 50hrs.	1/65-11/65	3032	4757	1725
3450	N A S A	NAS 3 7073 PB		2 dummy Elem. + 1 dummy Shim 9 std. Elem. at 1,135 ea.	+ 2,465 10,215	12/64-7/65	12,370	12,680	310
3451	U.S. Naval Res. Lab.	173-13672 (X) 65		1 Dummy Shell Ass'y.	545	1/65	165	545	380
	YEAR 1965								
3501	Reactor Experiments	1440		100 sq.in. U Foil	503	1/65-2/65	176	503	357
3502	Argonne	481188		Weigh & Pack PRDC Mat.	240	2/65	53	240	187
3503									
3504	CEN Belgium			30 Elements + 30 sets Plates	88,980	2/65-9/65	66,177	88,980	22,836
3505	Lawrence Aviation	25053		Roll Titanium Alloy	331	2/65-7/65	207	331	124
3506	Sylvania Towanda	58958		Press Nickel Billits (8)	+ 756	3/65	1444	1002	(442)
3507	I B M	A59615 L6J711		10 lbs. Silfas Copper	250	7/65-11/65	INCL Rib 7,353	250	(7,103)
3508	NUMER	AHK M16607		2 depleted & 2 enriched Elements (Pressure Bonded)	1,723 2,335	6/65-11/65	2,297	1723	(524)
3509	Brookhaven	040611		25 one gr. U-235 Fuel Plates	1,288	5/65-10/65	3976	1288	(2688)

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Order No.	Customer	Order No.	SNV Code	Description	Contract Price	Period of Delivery	Mfg. Cost	Selling Price	Gross Profit (L)
3435	N A S A	C-40189A		#9-074 Dismantle & scrap 1 elem.	353	9/64-10/64	109	353	244
3436	Brookhaven Natl. Labs.			10 RELET + 1 ACCEPT TATES 1650 BGR Fuel Elem. + 30 ELEM	2350 285 129,244	9/64-1/64	176602	121,879	(47,23)
X 3437	US AEC & American Std.	AT(30-1) 3183		2 Cores and 1 Bundle	1,392,000	9/64-2/64			
3438	Brookhaven Natl. Lab.	041833		200 grams. depleted UO ₂ powd.	55	9/64	-	55	55
3439	CERCA			5 Core Sheets of 6 sizes	1,415	9/64-10/64	431	1415	984
3440	Astrosystems	5732		Weld Parts	60	9/64-10/64	23	60	37
3441	T.O.D. Mfg. Co.	10361		Roll 12 Inconel pcs.	T + M	10/64-11/64	53	73	20
3442	CEA France	6715		+ 31 extra at 13.50 610 Std. Pegase Cores at 21.00 ea.	+ 418 16,470	1/64-2/65	13,853	14,889	3036
3443	" "	"		+ 15 extra at 12.10 90 Control " " at 24.25	+ 182 2,182	10/64-2/65	1,712	2367	652
3444	CEN Belgium	466.103/ 720/1582		at 1,151 set 20 sets Fuel Plate FOX 5 Tube Elem.	23,020	11/64-2/65	19,014	23,020	4006
3445	U S A E C NYO			CANCELLED					
3446	Gyrodyne 410-4	37516		Roll Alum. Pcs.	\$35./hr.	11/64-12/64	120	382	262
3447	Sylvania Towanda	T155420		1148 gr. Europium Oxide	1,148	11/64	-	1148	1148
3448	Univ. of California	1889903		2 Fisahn Foil Weld Ass'y.	4,174	12/64-2/65	2585	4,174	1589

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	IBM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3421	Astrosystems	05470		Machine & Weld Cones	370	7/67-7/67	180	370	190
3422	Phillips Petroleum			Storage Chg. for 7 Birdcages	7.50 per da.	—	—	—	—
3423	Pall Corp.	99880		Roll Plates \$17.50 per hr. 23 hrs. Limit	766	7/67-12/67	957	1380	723
3424	IDAHO NUCLEAR CORP Phillips Petroleum	C-259		SIDE PLATE VENTS - COMBS 240 ATR Elem. \$1,660 ea.	398,400 (277)	8/64-8/66	648,556	402,076	(245,780)
3425	"	"		15 EXTRA DUMMY ELEM @ 1350 70 SIDE PLATE VENTS - COMBS 10 Dummy ATR Elem. \$1,170 ea.	20,850 11,700	8/64-5/65	70,266	33,750	(36,516)
3426	"	"		1 SET (1) VENTING SIDE PLATES 3 Special ATR Elem. \$1,460 ea.	728 4,380	8/64-3/65	16,737	5,978	(10,759)
3427	AMF Atomic (Pakistan)	A-11856		22std. Elem. at 802. 2 partial Elem. at 793.	19,230	9/67-1/65	25,216	19,230	(5,986)
3428	" " "	"		7 Control Rod Elem. at 847.50	5,932	8/67-12/67	5,992	5,932	(60)
3429	" " "	"		1 Dummy Std. - 1 Dummy Control	950	8/67-12/67	777	950	173
3430	ATL - G E	205-79999N		72 GEIR Elements \$1,050. ea.	75,600	9/67-7/65	80,774	75,600	(5,174)
3431	ATL - G E	"		30 GEIR Control Rods	22,800	8/67-8/65	28,857	22,800	(6,057)
3432	ATL - Univ. of Missouri	205-09536N		8 Fuel Elem. at \$2,863.	22,904	9/67-3/66	55,836	22,904	(32,932)
3433	" " " "	"		4 Fuel Elem. at \$2,374.	9,496	9/67-2/66	19,012	9,496	(9,516)
3434	I B M	BC 47525 J 613		Supply Laminate Sample	450	9/67-10/67	1,799	750	(999)

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SDM Code	Description	Contract Price	Period of Performance	Wgt. Cost	Selling Price	Gross P (L)
3407	Sweden			10 Control Elem. \$820.ea.	8,200	2/64-9/64	9176	8,200	(976)
3408	Sweden			+ SPECIAL NOZZLES 140 Std. Elem. \$880.ea.	123,200	2/64-1/65	89379	123,515	37,136
3409	McMaster Univ.	811001		Modify 3 Control Rods	945	3/64-9/64	369	945	576
3410	CEA			SEE 3351 & 3358					
3411	NASA	C 278		Install Combs to Elem.#9 099	265	7/64-6/64	210	265	55
3412	Argonne Nat'l. Lab.	451001		15 Fuel Plates	8,495	5/64-11/64	14,184	8495	(1,689)
3413	Motecatini, Italy	E 30/ 03607/ 63		2 Sheets H/AL Foil	3,737	4/64-10/64	101	3737	3,636
3414	Sweden	895729		Return Elements 24 repaired 1 reprocessed	6,180	5/64-5/65	8,137	5945	(2,692)
3415	Advanced Tech. Labs.	M 12787		2 Control Plates to be rolled \$32. per hr.		6/64	476	1376	930
3416	Manhattan College	B-13282		12 irradiation discs to be punched	120	6/64-7/64	173	120	(53)
3417	U S A E C NYOO	AT(30-1) 3303		1 SM-1 Fuel Elem.	3,400	6/64-9/64	878	3900	2552
3418	" "	"		18 Stationary Plates 16 movable Plates	7,732	6/64-9/64	4347	7732	3388
3419	" "	"		96 Plates	3,150	CANCELLED			
3420	C N E N Italy			11 PIR Elem. 2 Loop Mock-up 4 Fission Chambers	2,040	4/64-6/65	13822	2070	(11,782)

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SIM Code	Description	Contract Price	Period of Performance	Wtg. Cost	Selling Price	Gross P. (L)
3371	Marquardt Corp.	470302		Coat Nozzles	430	12/63	199	430	231
3372	Australia	0065426		40 Mbits Fuel Plates	4,360	12/63-12/64	9,357	7,632	(4,725)
3373	G T & E Labs			Coat 2 pcs. Astrosystem	340	12/63	90	390	250
3374	AMF Atomic	A 9835		Cover cost of disassembly and reclaiming U from 8 elem. + storage for 25 elem. (Net 1768)	1,481 + 25 cont. + STORAGE	12/63-7/65	85	1723	1638
3375	Lycoming Division	JY13977		Coat Bars & Strips	250	12/63	93	250	157
3376	Marquardt Corp.	371839		Coat Parts	360	12/63-1/64	298	360	112
3377	Bell			CANCELLED	charge 666	12/63-8/64	454	620	166
3378	Bell Aerosystems Co.	BC 504936-1		Coat 1 chamber 1 injector blank	720	1/63-2/64	CANCELLED		
3401	Reactor Experiments	1362		25 sq. in. U Foil	250	2/64	-	250	250
3402	CERCA			Cores and Frames	964	2/64	488	964	476
3403	General Electric	205-09512		40.43 gr U-235 Reprocess U Scrap	200	3/64	-	200	200
3404	Phillips Petroleum	AED 55774		95 Depleted Fuel Plates	950	2/64	19	950	931
3405	Sweden			105 Std. Elem \$832. ea.	87,360	2/64-11/64	80,942	87,360	6,418
3406	"			1 ADDITIONAL ELEM @ 696. 8 Control Elem, \$870. ea.	+ 696 6,860	2/64-10/64	7946	7,656	(290)

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SNM Code	Description	Contract Price	Period of Performance	Wtg. Cost	Selling Price	Gross P (L)
3357	Phillips Petroleum	AED 52186		43 Dummy ATR Plates	430	10/63	131	430	299
3358	CEA France	See order #3351 5730		425 cores Pegasse + 35 "	15,497	12/63-5/64	9667	15,497	5830
3359	Bell Aerosystem	BC 504902-6		Coat Thrust Chamber & Samples	650	10/63	236	650	414
3360	CEA France	5.811		4650 Biloe Cores & Frames at 26.65	123,923	11/63-9/64	37,617	125,724	88,107
3361	Bell Aerosystem	505065-6		Coating of Parts	2,787	11/63	1,711	2,787	1,076
3362	Bell Aerosystem	504977-6		Coat 2 ADDITIONAL CHAMBERS Coat 5 Chambers	+ 435 1,210	11/63	841	1,645	804
3363	USABC NYOO	AT(30-1) 3303		5396 ea. ^{Mch 1-2} 41 Stationary Elements at (3,502)	221,236	11/63-11/64	222,375	221,236	(1,139)
3364	" "	" "		8 Moveable elements at 5928 ea.	47,424	11/63-11/64	52,172	47,424	(5,048)
3365	Bell Aerosystems Co.	BC 505156-6		Apply coating to chamber assbly.	370	11/63	335	370	35
3366	Belgium			30 depleted Al/U cores 30 frames	650	11/63-1/64	851	650	(201)
3367	CERCA	5308		2 puching dies.	850	1/64-8/64	1158	Reo. (625) 225	(933)
3368	Industrial Reactor Lab			6 Std. Elem. at 835. ea. 1 Modified at 1015. ea.	6,025	12/63-2/64	6929	6025	(904)
3369	N A S A	NAS 3- 3188 PB		220 Std. Elem at 977.30	215,006	12/63-10/64	197,732	215,006	17,274
3370	N A S A	NAS 3- 3188 PB		C-105540-PB / Control Reb @ 740.82 50 Control Elem. at 871.55	+ 741 43,577	12/63-10/64	29,894	44,318	19,424

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3343	G T & E Labs	28903		Coat 3 Chambers	645	9/63	292	645	353
3344	Belgium			1404 Cores at \$40. ea.	56,160	11/63-10/64	53,023	56,160	3,137
3345	G T & E Labs	28901		Coat 24 Rods	1,220	10/63	341	1,220	879
3346	CERCA			34 Al/Boron Plates 85.00 ea. 135 88 Boron Plates 26.50 ea.	6,468	10/63-3/64	7031	6,468	(563)
3347	Phillips Petroleum	C-251A		8 UO ₂ Fuel Rods (coated) 812.50 ea. + 1,044 8 UO ₂ " "(sleeved) 1025.00 ea.	14,700	10/63-9/64	25,601	15,696	(9,905)
3348	Curtiss-Wright	FX 726801-1		Rolling Bar Stock	126	9 & 10/63	34	126	92
3349	G T & E Labs	29137		Coat T-111 Specimens	760	10 & 11/63	304	760	456
3350	C A N C E L L E D -----								
3351	CEA France	See order #3358 5730		+ 150 2800 Pegase Cores & Frames	111,952	10/63-7/64	79,915	111,952	37,037
3352	Marquardt Corp.	371374-01		Coat 3 Combustion Chamb.	565	10/63	180	565	385
3353	Babcock & Wilcox	96140-1		10 pieces Alum. Extrusion	270	10/63	23	270	247
3354	Bell Aerosystems			Coating (18) samples Cilicide " " " R-505-C		10/63-2/64	256	n.c.	(256)
3355	Curtiss-Wright	FX 726813-1		Roll 270 pieces	725	10/63-	68	725	657
3356	CERCA			Cores & Frames + extra	+ 167 625	10/63-1/64	357	792	735

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SDM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3329	Belgium			70 6 tube elem + 17 20 Sets Fuel Plates + 20	56,799 155,130	6/63-10/64	197,447	211,929	14,785
3330	"			40 5 tube Elem 20 5 tube Elem	33,040 66,080	7/63-8/64	47,190	99,120	54,930
3331	Hillips			Marcoat 12 coupons	250	7/63	97	250	153
3332	AMF Atomics			11 APTC Critical Elem 24,306 100 U-Al Foils 136	24,442	6/63-11/63	26,661	24,442	(2,219)
3333	" "			10 APTC Dummy Elem	+ 350 9,144	6/63-10/63	4,964	9,494	4,530
3334	" "	PO A9096		1 APTC Flow Test Elem. 1,376 1 Flow Test w/Flow Taps 1,758	3,134	6/63-12/63	8,031	3,134	(4,897)
3335	" "			1 Loop Mock-up for APTC Critical Experiment	10,691	8/63-11/63	9,323	10,691	2,368
3336	G T & E Labs			Coat 114 Samples	650	7/63	338	650	312
3337	National Lead	5307		1100 lbs. Uranium/MO Alloy	500	8/63	-	500	500
3338	G T & E	28900		(Marquardt) Coat Thrust Chamber	360	8 & 9/63	308	360	52
3339	CEA France	5726		308 Std. Elem.	21,560	9/63-10/64	19,643	21,520	1917
3340	" "	"		76 Control Plates	5,320	9/63-7/64	6,015	5,320	(695)
3341	Anes Laboratory	AH-1832		3 Dummy Fuel Elem.	2,040	9/63-11/63	1,842	2,040	198
3342	AMF Atomics	A9835		Transport 17 PTR Elem from IRL Jersey to N.Y. City	625	10/63	-	625	625

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SNM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3315	Phillips	AED 45005		Hard Coat & Seal 36 Plates	875	3 & 4/63	363	875	512
3316	C A N C E L L E D								
3317	Euratom ISPRA - Italy	21.073/ 2030413		1005.40 ea. 50 Fuel Element	50,270	4/63-10/63	36,072	50,270	14,198
3318	Iowa State - Ames Labs	A3-3789		at 409 ea. 24 Dummy Elements	9,816	4/63-6/63	9,035	9,816	781
3319	" " " "	"		at 929 ea. (190) 30 Fuel Elements <i>unit</i>	27,679	4/63-10/63	23,255	27,679	4,424
3320	General Electric GEIR	205-71000		72 Std. Elements at 1,364.75	98,262	4/63-1/64	85,998	98,262	12,264
3321	" " "	"		20 Control Rod Elem at 950.00 7 " " " " 750.00	19,350 5,250	5/63-1/64	33,201	24,250	(8,951)
3322	Linde Company	LAB 33315		Machine Thorium Rod	350	5/63	75	350	275
3323	Phillips Petroleum	AED 45998		Marcoat 6 Al Plates	550	4/63-7/63	322	550	228
3324	CERCA			100 depleted Silos +80 frames core components	C16. 200 1,525	5/63-3/64	437	563	129
3325	CEA	5408		26.35 ea. 2478 Cores, Frames & covers	65,295	5/36-11/63	20,207	65,295	45,088
3326	West Germany	91007-14		20 Gr. of Metal Foil	495	5/63-8/63	585	495	(90)
3327	Univ. of California	RFQ 6694605		Cancellation Coat one Fake & components	9,867 -14,985-	6/63-10/63	5,421	9,867	4,446
3328	Phillips Petroleum	AED 47438		50 Retainer Rings for MTR	137.50	6/63	26	137.50	111.50

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COMMERCIAL PLANT JOB LOG

Order No.	Customer	Customer P.O. #	SIM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P (L)
3301	G T & E Labs	23010		Coating Bell Aerosystems Chamber 1 at 600 +3 at 400	1,800	3/63-8/63	2,321	1,800	(521)
3302	Brookhaven Nat'l. Lab	C33356		20 Al Clad U Al Plates	670	1/63-2/63	341	670	329
3303	Republic of So. Africa	N978		10% U/Al Alloy Foil	403	3/63-6/63	154	403	249
3304	AMF Atomics	A 8077		12 Laminated Dummy Plates	1,035	3/63-6/63	517	1,035	518
3305	Columbia University	00578		Provide Mtd. to Assembly #C18	290	3/63	513	290	(223)
3306	Brookhaven Nat'l. Lab	C35323		1 HFBR Dummy Fuel Elem.	4,514	3/63-5/63	5,293	4,514	(779)
3307	G T & E Labs	24103		Services on Inconel Vacuum Retort Furnace	T + M	2 & 3/63	260	316	56
3308	General Electric	205 39032		Rebuild 12 GEFR Control Elem	5,928	2/63-8/63	6,083	5,928	(155)
3309	N.Y. AEC - Wright Field	Contract AT(39-1)		1,540 es. 1,700 es. 40 Stationery 6 Control Rod	71,800	3/63-11/63	47,217	71,800	24,583
3310	Israel	Contract 3/15/63		6 Control Elements	5,700	3/63-7/63	6,954	5,700	(1,254)
3311	N A S A	C-94401 FB		1 Functional Fit Cage	1,905	3/63-7/63	1,707	1,905	198
3312	Union Carbide	242- 00138		40 Std. Elements	34,200	3/63-7/63	27,444	34,200	6,756
3313	Belgium			1,045 es. 1 extra Plate 4 Assembled Elem. (5 tube)	4,180	5/63-12/63	4,253	4,218	(36)
3314	Fairchild	02448		100 Sheets Alum. Rolled	250	3 & 4/63	489	250	(239)

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COMMERCIAL TRAILER LOG

ORDER No.	CUSTOMER	CUSTOMER PO. #	SHM CODE	DESCRIPTION	CONTRACT PRICE	PERIOD OF PERFORMANCE	ACTUAL MFG. COST	SELLING PRICE	GROSS P(L)
3253	Oak Ridge - Union Carbide	93X - 08680		2 Alum Elem at \$576 375 ORR Fuel Assemblies at 748.39 3 ADDITIONAL ELEM	281,798 + 1,777	7/64 - 7/64	274,723	283,295	8570
3254	Oak Ridge - Union Carbide	"		34 Shim Rod at 639.71	21,750	10/64 - 3/64	29,879	21,750	(8,129)
3255	CEA France	4,892/R		278 Fuel Plates at 86.00 @ 18 PLATES	894 { 23,908	10/64 - 9/63	16,700	24,733	8033-
3256	Brookhaven Nat'l Labs.	C-21866		CAST INGOTS & SLABS LAT PRICE	5,150	11/64 - 11/63	3844	5,150	1344-
3257	Natl Aero. & Space Adm.	NAS 3-3188-PB		48 Standard Fuel Elements @ 1106.25 @ 2723 ea.	53,100 56,304	12/64 - 12/63	92,783	53,100	(39,682)
3258	Natl Aero. & Space Adm.	"		12 Control Rod Assemblies @ 940.50 @ 992 ea.	11,286 11,904	12/64 - 1/64	16,013	11,286	(4,727)
3259	VOID								
3260	Sumitomo Shoji	SA-XFL-8351		Purchasing & Modifying Equipment for Japan	Incl. Exp. of buying 16,500	11/64 - 3/63	9668	13375	3707
3261	Reactor Experiments	304		20 Depleted U Discs	350	12/62 - 2/63	134	350	216
3262	Sylvania - Towanda	TT 34807		Decontaminate Swager Components	600		- CANCELLED -		
3263	McMaster University	CONTRACT		25 STD - 9 CONTROL - 3 MINIFEB 899 @ - 816 @ 1435 @	32,670	11/63 - 11/63	32,498	32,640	(43,89)
3264	Brookhaven Nat'l Labs.	C-35106		3 PALLADIUM U INGOTS	700	12/62 - 1/63	79	700	321
3265	C.E.R.C.A.	Letter 11/21/62		20 Sets Components (Cores, Frames, Covers for Pegase Ptlis)	625	1/63 - 2/63	194	625	433
3266	C.E.A.	CONTRACT 5114		PLATES FOR ASSEMBLY AT CEA 726 STD U CORES 14 BQ. AS LO BQ. (40) @ 75.00 @ 87.00 @ 212.00 @ 26.00	41,991	1/63 - 11/63	43,486	41,991	(1495)

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Order No.	Customer	Contract No.	Description	Contract Price	Period of Performance	Qty. Delivered	Selling Price	Grains
3239	SMIA USAEC NYOO	AT(30-1) 3065	8 Control Rod Elem.	51,341	8/62-8/63	4,510	5,134.1	5831.
3240	SMIA USAEC NYOO	AT(30-1) 3065	8 Dummy Fuel Elem.	5,770	7/62-4/63	8,236	5,770.	(2,466)
3241	SMIA USAEC NYOO	AT(30-1) 3065	4 Neutron Absorber Sections	9,995	8/62-6/63	15,771	9,995.	(1,776)
3242	Brookhaven Natl. Lab.	C25382	150 ft. Natural U-Al Alloy Foil	925	10/62 - 12/62	264	925	661
3243	Phillips Petroleum	C-241	26 ARMF Mark I Fuel Elem. 8 sets Side Plates & End boxes	55,010	9/62-9/63	34,291	55,010.	20,719.
3244	Phillips Petroleum	C-241	5 ARMF Mark II Fuel Elem.	20,965 20,772	10/62-4/63	11,341	20,965.	16,261.
3245	Phillips Petroleum	C-241	4 ARMF Mark III Fuel Elem.	8,960	10/62-4/63	8,171	8,960.	789.
3246	Sveden	CONTRACT 12/1/62	3 EXTRA ELEM. 228 Std. Fuel Elem at \$828.	1,700 188,784	9/62-2/63	16,785	197,279	32,994
3247	Sveden	"	2 EXTRA ELEM @ \$700 18 Control Elem at \$785	1,700 14,130	10/62-1/63	20,236	15,530	(4,63)
3248	Italy - Holland	"	26 Std - 2 Control 3 Dummy Elem	25,429	10/62-2/63	23,788	25,429	1,641
3249	Sylvania - Townsends	TT 33292	Determine Temperature of Vacuum Induction Unit	T & M	9/62	2,311	2,542	231
3250	General Dynamics Corp.	890694X	35 Elements & 48 Plates	31,785	9/62 - 12/62	29,382	31,785	2,403
3251	ATOMICS INTERNATIONAL	NAISII 8769H	24 URANIUM COATED 7 URANIUM ALLOY FUEL PLATES	3,150 4,550	10/62-4/63	1,997	3,150.	1,153.
3252	Socony Mobil Oil Co.	L-62-7993	2 Dummy Fuel Element Shells	720	11/62	1,899	720	(1,179)

SYL00051991

Order No.	Customer	Order #	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Sp. (L)
3225	Sylvania Towanda	TT31126	Blanket order 5/31/62-8/31/62 Silver Infiltrate Tungsten	time & matl.	5/62-12/62	5706	6076	370
3226	Semimetals, Inc.	2382	Cast 10 pieces Polycrystalline Germanium Blanks	625	6/62-9/62	385	435	50
3227	C E A Siloe # 2	11694	156 Std. - 32 Control 66 Plates - 4 Plates + 3 Plates	171,216 171,216 265,398	7/62-10/62	130,091	171,216	4,116
3228	C M E N Italy		43 ISFRA Fuel Elements	39,525	7/62 - 10/62	22,630	39,525	16,895
3229	General Electric	205 38494	200 S. S. Plates	60,900	7/62 - 12/62	51,730	60,291	8,561
3230	Phillips ATR	C-232	SAME CONTRACT AS 3184 190 CLAD FUEL PLATES	36,880	6/62 - 11/62	25,629	36,880	11,251
3231	Atomics International	N2111 8886-E	Isotatically Bond Niobium to Fuel Plates	5,424	6/62-11/62 6/62-11/62	4,437 XXXXX	5,424	987 XXXXX
3232	V O I D -----							
3233	Phillips Petroleum	C-2567	18 Tho-Bismuth Slugs) 60 days 42 Tho-Bismuth Discs) after rec.matl.	8050 8700	7/62-7/62	7,170	8,060	5,480
3234	Pratt & Whitney	795246	Pressure Healing 3 Blade C Castings	2,100	10/62-1/63	857	2,100	1,243
3235	C E R C A	MC3,624	Fuel Element Components	7017 7444 7444	8/62-9/62	11,731	7,073	(4678)
3236	Sylvania Towanda	TT32498	Cast Germanium	T & M	8/62	186	290	104
3237	Brookhaven Natl. Lab.	C-21374	5 Ingots - Palladium Alloy 1 Ingot - Niobium Alloy	397	8/62-9/62	165 206	397	232 XXX
3238	USAEC SMIA NYOO	AT(30-1) 3065	33 Stationary Fuel Elem f.o.b. Ft. Belvoir, Va.	10189 (3542) 191,994 193,724	7/62-11/62	196,000	191,994	(4010)

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COMMERCIAL PLANT JOE. LOG.

Order No.	Customer	Customer P.O. #	SNM Code	Description	Contract Price	Period of Performance	Mfg. Cost	Selling Price	Gross P. (L)
3211	Industrial Reactor Labs.			6 Control Elements 1 Dummy Element	6,820.	4/62-9/62	8,198	6,820	(1,378)
3212	Leesona Moos Labs.	3755		Roll 3 pieces AG PD	125	3/62-4/62	31	125	94
3213	Towanda	TE 29586		Roll Hbly Sheet	Not to exceed 240	4/62-5/62	69	75	6
3214	Phillips Petroleum	C-240		7 MTR Std. Elements @ \$11.49 332 MTR Std. Elements	3751 233,017	4/62-3/64	197,476	236,131	39,896
3215	Phillips Petroleum	C-240		150 ETR Std. Elements + 4 ETR 150 ETR Std. Elements 420 ETR Std. Elements	110,700 109,500 329,755	4/62-11/64	498,893	517,560	20,686
3216	Phillips Petroleum	C-240		16 ETR Control Ets @ \$64.47 120 ETR Control Elements	10,276 96,341	5/62-5/64	75,760	104,933	31,173
3217	Brookhaven Nat'l. Lab.	C-13676		2 Special MTR Elem + 2 plates	7,644	4/62-7/62	8,096	7,644	(452)
3218	N A S A	71538 PB		Modify & Rework 2 NASA owned elements	530	6/62-7/62	530	530	-
3219	Hughes Treidler	34312		10 lbs. Alum Alloy Rolled	250	5/62	482	238	(244)
3220	Thompson Ramo Wooldridge	88- 46828	(B)	Aluminide Coat 28 Samples	500	4/62-5/62	135	500	365
3221	Atomics International	R21814 8827-B	(B)	Isostatic Pressing 10 U-10 Mo Cores	3,375	4/62-5/62	2,253	3,375	1,122
3222	Phillips Petroleum	AED 30166		4 pr. MTR/ETR Side Plates	287	5/62	-	288	288
3223	Sylvania Towanda	TT 30786		Silver Infiltrate 2 Tungsten Preforms	Time & matl.	5/62	3,475	3,475	-
3224	Sylvania Towanda	TT 30787		8 Cast Germanium	2,400	5/62-7/62	1,063	2,400	1,337

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UNITED STATES ATOMIC ENERGY COMMISSION

Projects Authorized Construction Not Started	Total
ions)	
	3 3.2
	67
	2.4
	4.3
3 8.5	6.9
.1	12
	21.3
	123.6
114.1	106.6
114.1	379.8
<u>327.6**</u>	<u>81.149</u>

Annual Report to Congress

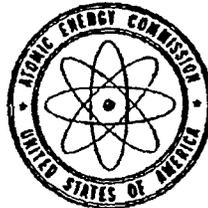
OF THE

ATOMIC ENERGY COMMISSION

FOR

1961

57 approved May 13, 1960



January 1962

REPOSITORY ROECO/CIC

COLLECTION AEC BOOKS

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FOLDER SEMIANNUAL REPORTS
1959-1961

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C.

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LETTER OF SUBMITTAL

WASHINGTON, D.C.,

30 January 1962.

Sirs: We have the honor to submit herewith the Annual Report of
United States Atomic Energy Commission for 1961 as required
by the Atomic Energy Act of 1954.

Respectfully,

UNITED STATES ATOMIC ENERGY COMMISSION,

JOHN S. GRAHAM.

LELAND J. HAWORTH.

LOREN K. OLSON.

ROBERT E. WILSON.

GLENN T. SEABORG, *Chairman.*

Honorable

The President of the Senate.

Honorable

The Speaker of the House of Representatives.

III

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- International C.....
- International Nucle.....
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NUCLEAR POWER FOR SPACE

Development of nuclear energy utilization for aerospace programs is being carried on by the Commission under two programs and in cooperation with other Government agencies. The Systems For Nuclear Auxiliary Power (SNAP) program has already proved successful with the orbiting, during 1961, of two TRANSIT navigational satellites each carrying radioisotope-fueled "batteries" which provide power for the satellites' radio transmitters. The second program is that involving nuclear-propelled rockets, Project ROVER, which is carried on in cooperation with the National Aeronautics and Space Administration. (Work in the nuclear ramjet feasibility program, Project PLUTO, is reported under Military Reactors.)

SYSTEMS FOR NUCLEAR AUXILIARY POWER (SNAP)

The objective of the SNAP program is to develop small, lightweight nuclear power sources for satellites, space craft, and for other special applications with appropriate safety review by the Commission. Odd-numbered SNAP projects use the heat from the decay of selected radioisotopes, with the units being developed for the Commission by The Martin Co. (now Martin-Marietta Corp.). Even-numbered SNAP projects use heat from the operation of compact reactors which are under development by the Commission's contractor, Atomics International.

Rotating and static power conversion systems utilize the heat provided by the SNAP units. With the exception of SNAP-10A, all reactor units under development are planned for use with rotating or thermoelectric power conversion systems. Advanced systems may employ thermionic conversion. The SNAP radioisotope units presently being developed are for use with static power conversion systems, either thermoelectric or thermionic.

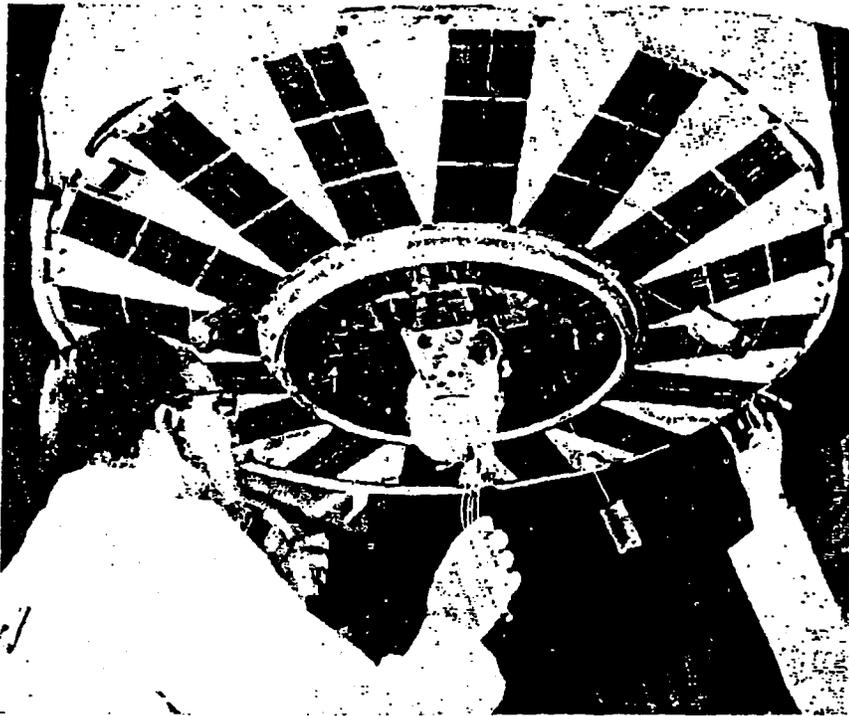
SNAP Radioisotope Projects

A major milestone in the SNAP program was reached June 29, when a small plutonium 238-fueled thermoelectric generator, similar to a SNAP-3 type,¹ was successfully placed in orbit as a power source for the TRANSIT-4A navigational satellite. A second such SNAP unit was used in the TRANSIT-4B satellite put into orbit on No-

¹ First demonstrated at the White House on January 16, 1959.

shown leaving Cape
first launching of an
transmitters used in the
pound thermoelectric
watts of electricity.
transmitters.) The satellite
and (top of rocket).
and radioisotope-fueled

November 15, 1961. The five pound, 2.7-watt generators are powering two of the four navigational transmitters in each of the orbiting satellites and are expected to continue satisfactory operation for several years. These small generators are the first steps in the program now underway to develop a radioisotope thermoelectric generator (designated SNAP-9A) for the full-scale operational TRANSIT navigational system. The purpose of the TRANSIT satellites is to provide a worldwide means for ships and aircraft to determine accurately their positions electronically rather than through celestial observations.



Forerunner Device. Performance of the Commission's first two SNAP (Systems for Nuclear Auxiliary Power) devices to be placed in orbit are being evaluated for future use of higher-powered nuclear generators in the nation's space effort. Photo shows the first SNAP generator to be placed in orbit being attached to the Navy's TRANSIT 4A satellite. The tiny spherical atomic device (center of photo) is instrumented so that its performance in space can be monitored by tracking stations throughout the world. Two such satellites were placed in orbit on June 29 and November 15, 1961. The plutonium 238 thermoelectric generators were developed for the Commission by the Martin-Marietta Corp.; the navigational satellites were developed for the Navy by the Johns Hopkins Applied Physics Laboratory.

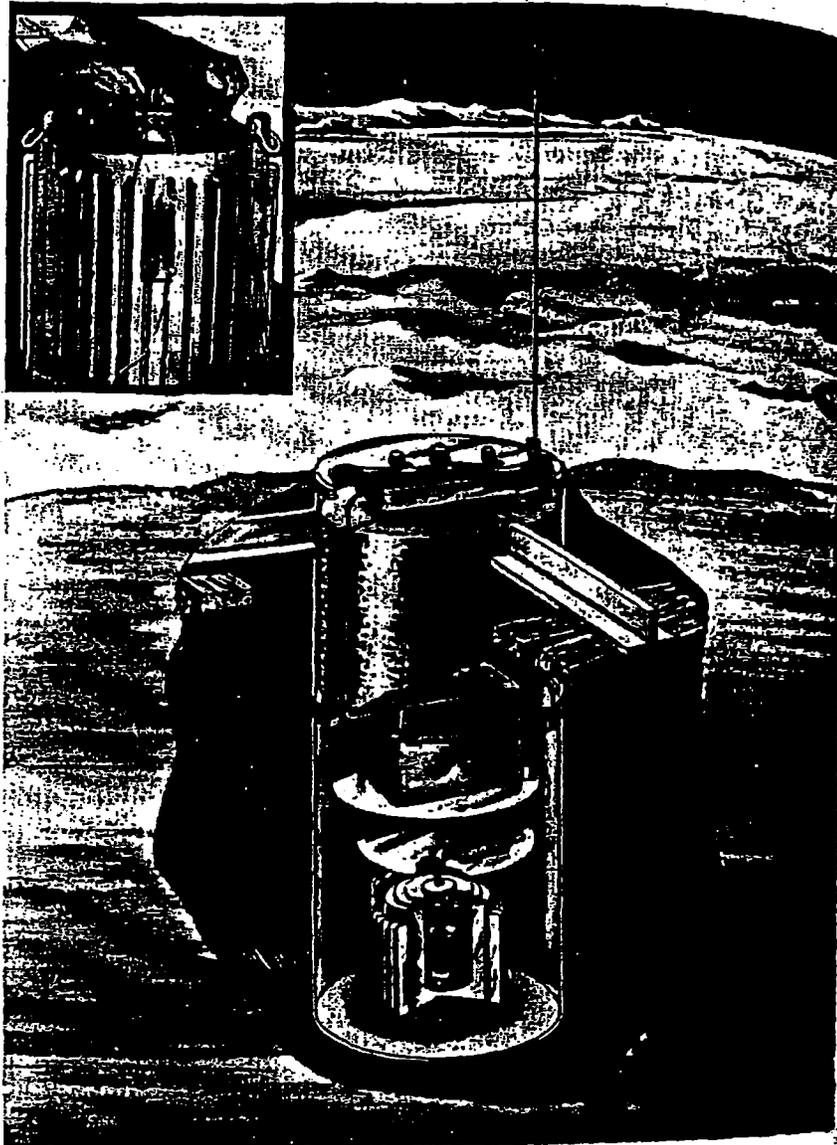
The SNAP-1A, a project initiated to develop a thermoelectric generator to produce 125 watts of electricity for one year in space, was

re-evaluated and term
Air Force requireme
were revised to prov
tested, non-fueled un
The environmental te
fueled unit were can
manner. Fabrication
completed in June 11
applied in the other S
The SNAP-7 powe
generators being devi
cations. SNAP-7A a
and SNAP-7D are e
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power an automatic w
Coast Guard in Decem
30-watt units will be
the Coast Guard in a
be used by the Navy i
The Commission is
operational prototyp
SNAP-9A is a pluto
design lifetime of t
totally 27 pounds and
The SNAP-11 pro
SURVEYOR "soft" i
Aeronautics and Sp
trajectories from Cal
regard to where the
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to determine the feasi
loading. Preliminary
indicate the feasibility
electric generator on S
ated that such a p
scientific value of the
being gram quantitie
samples are now bei
Testing Reactor in I
SNAP-11 is being for
In September, the f
heated, thermionic ge
space-spaced vacuum c
The results indicated
the maximum to be e

5:00:12:08

diode approach was abandoned in favor of the very promising cesium diode. It is planned to fuel a thermionic cesium diode generator, designated SNAP-13, in late 1962.

A flight test program was conducted in which Atlas E pods were used to test experimentally the validity of the theoretical heating



Antarctic Weather Station. Artist's drawing of the Navy's automatic, unmanned weather station now being emplaced in the Antarctic and which will be powered by a SNAP-7C power unit (shown at base of drawing and in the photo insert). The strontium 90 generator is approximately 21 inches tall and 19 inches in diameter. It will provide five watts of electricity continuously for at least two years to power the weather telemetering station. The nuclear thermionic generator was built for the Commission by the Martin-Marietta Corp.

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and heat transfer
burnup of SNA
was successfully c
during Novembe
A feasibility study
as heat sources f
ment Corp. in ea
justified initiating
heat testing, of a
the Idaho Chemica

SNAP Reactor Projects

The goal of the SNA (electrical kilowatt) reactors. Development work on systems for flight. The effort on SNAP-2 work on compact reactor equipment.

A prototype SNAP-2 reactor (SER), successful in 1960. A second development System (SOS) went critical in August 1965. The SNAP-4 project is the development of a reactor for the capability of 100 kw at an terrestrial location. The SNAP-2 hydride fuel cell system. Development of compact to 4,000 ekw. Development continued through the SNAP-8 project. The SNAP-8 project is a nuclear electric generator for power in orbit. The reactor is a 30 ekw turboelectric. Development of the

omising cesium
iode generator,
s E pods were
retical heating



automatic, unmanned
which will be powered
d in the photo (next),
tall and 10 inches in
ously for at least two
nuclear thermoelectric
etta Corp.

rate and heat transfer rate equations for use in the analysis of atmospheric burnup of SNAP isotope devices during re-entry. The first test was successfully completed in July. Additional tests were conducted during November and December.

A feasibility study on the use of calcined mixed fission product wastes as heat sources for electric power was completed by the General Instrument Corp. in early 1961. The favorable results of the study have justified initiating the second phase—the development, for electrical heat testing, of a 5-watt device designed to use waste products from the Idaho Chemical Processing Plant.

SNAP Reactor Projects

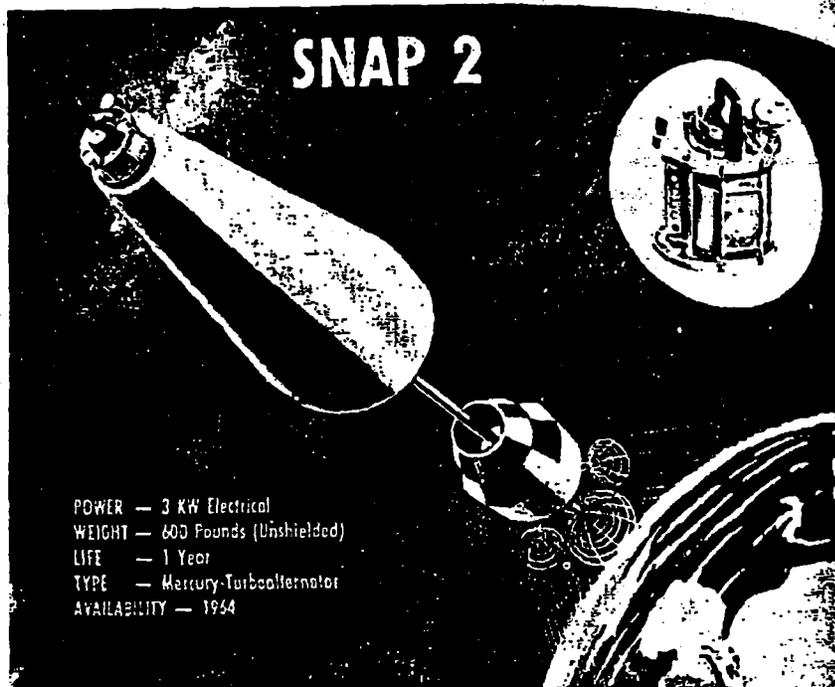
The goal of the SNAP-2 effort is to develop a very compact 3 ekw (electrical kilowatt) reactor-turboelectric system for space applications. Development work began in 1956 and is continuing. Delivery of systems for flight development tests should take place in 1964. The effort on SNAP-2 also provides basic research and development work on compact reactor technology and miniaturized conversion equipment.

A prototype SNAP-2 reactor, designated the SNAP Experimental Reactor (SER), successfully completed initial testing on November 1960. A second developmental reactor is to be combined with a turboelectric power conversion system and tested as the SNAP-2 Development System (S2DS) early in 1962. The reactor for the S2DS went critical in April at the Commission's facility operated by Atomic International at Santa Susana, Calif. After low-power tests, the reactor began power operation in August.

The SNAP-4 project originated during 1959 as a feasibility study in the development of a very compact reactor-turboelectric system with the capability of long unattended life in an underwater or remote terrestrial location. Design study and component development started in 1960 for this experimental reactor. The reactor is to use SNAP-2 hydride fuel technology and boiling water as a coolant in a single-loop system. The SNAP-4 project would require the development of compact turboelectric generators capable of generating up to 4,000 ekw. Design and development work on system components continued through the year.

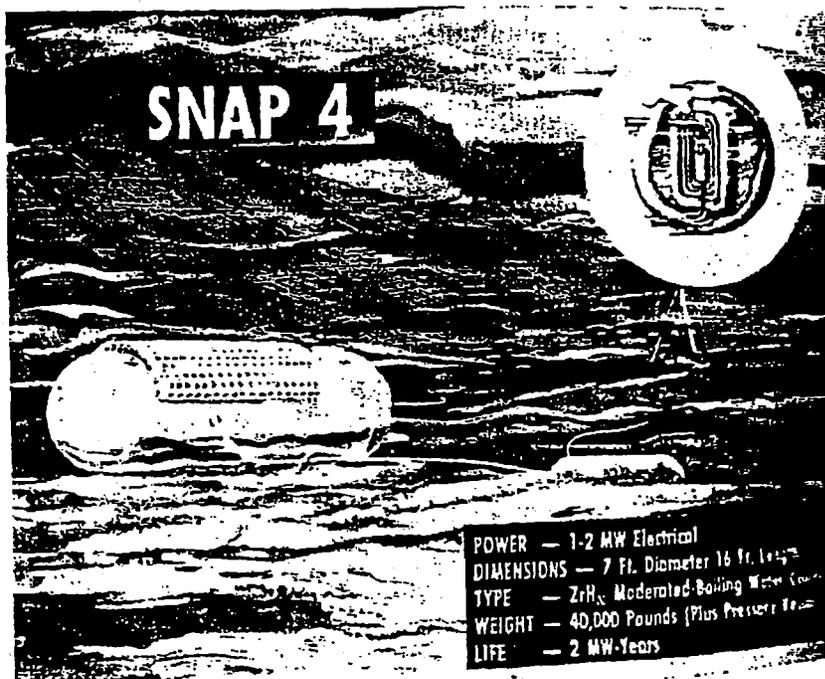
The SNAP-8 project is a joint Commission-NASA effort to develop a nuclear electric generating system for the NASA space program to provide power in orbital test of experimental electrical propulsion systems. The reactor is to have the thermal capability to run one or two 20 ekw turboelectric units. The Commission is responsible for development of the reactor, reactor control, and shielding, and

5000 7211



POWER — 3 KW Electrical
 WEIGHT — 600 Pounds (Unshielded)
 LIFE — 1 Year
 TYPE — Mercury-Turbogenerator
 AVAILABILITY — 1964

Space and Undersea SNAP Units. Even-numbered SNAP units utilize compact nuclear reactors to generate power. Drawing above shows the SNAP-2 concept which is being developed for space applications requiring three kilowatts of electricity. Drawing below is the SNAP-4 device which could be used for underwater devices requiring 1,000 to 4,000 kilowatts of electricity. Both devices are being developed for the Commission by Atomic International. The inset in both drawings shows the SNAP device.



SNAP 4

POWER — 1-2 MW Electrical
 DIMENSIONS — 7 Ft. Diameter 16 Ft. Length
 TYPE — ZrH₂ Moderated Boiling Water Reactor
 WEIGHT — 40,000 Pounds (Plus Pressure Vessel)
 LIFE — 2 MW-Years

NASA is responsible for development and integration of an operational space nuclear power system. Integration into the entire system. The reactor for 600 thermal watts at a temperature of 1,300° F. The SNAP-2 reactor began development in 1958. Design of the SNAP-2 was approved and construction of the test facility is scheduled to begin in 1963. The SNAP-10A produced the first electric power in space. A SNAP-2 type reactor will be launched with sodium-potassium coolant pumped by an electrochemical element. After orbital flight, the reactor will have remote control and will have a reserve of electricity at all times. Design of the SNAP-4 is a nonnuclear mass reactor. Orbital flight tests of SNAP-4 are scheduled in the 1963-65 period. The SNAP-4 is designated SNAPSHO. The SNAP-4 is a type of use of small reactors. SNAP-4 units will be launched into a long-lived orbit.

Spa

The Project ROVER is a joint project of the Atomic Energy Commission and NASA. The project is a demonstration of a nuclear propulsion system for space. The project is particularly for the development of a nuclear system with a specific impulse of 1,000 seconds.

The ROVER program is a joint project of the Atomic Energy Commission and NASA. The project is a demonstration of a nuclear propulsion system for space. The project is particularly for the development of a nuclear system with a specific impulse of 1,000 seconds.

5-00-1212



units utilize very
shows the SNAP-2
quiring three kilo-
which could be used
electricity. Both
ics International.



er 16 Ft. Length
Boiling Water Loop
Plus Pressure Vessel

NASA is responsible for the development of the power conversion equipment and integration of the reactor and conversion equipment into an operational system. NASA is also responsible for its subsequent integration into a suitable flight vehicle and for the flight test of the entire system. The reactor core design has been completed and will produce 600 thermal kilowatts and a sodium-potassium coolant exit temperature of 1,300° F. Fabrication of the first SNAP-8 experimental reactor began in March and will be completed in April 1962. Design of the SNAP-8 ground prototype nuclear test facility has been approved and construction at Santa Susana began in December. This facility is scheduled for completion by the end of 1962.

The SNAP-10A project is designed to produce a low-power, lightweight, electric power source for space operation and military purposes. A SNAP-2 type reactor is to be used at 30 thermal kilowatts output with sodium-potassium liquid metal coolant. The coolant is to be pumped by an electromagnetic pump from the reactor core to the thermoelectric elements where the heat is converted directly into electricity. After orbital startup, the system will not require active control and will have no moving parts. The system will produce 500 watts of electricity at a design weight, including shielding, of 750 pounds. Design of the flight systems was initiated in July, and the nonnuclear mass mockup system was completed in November.

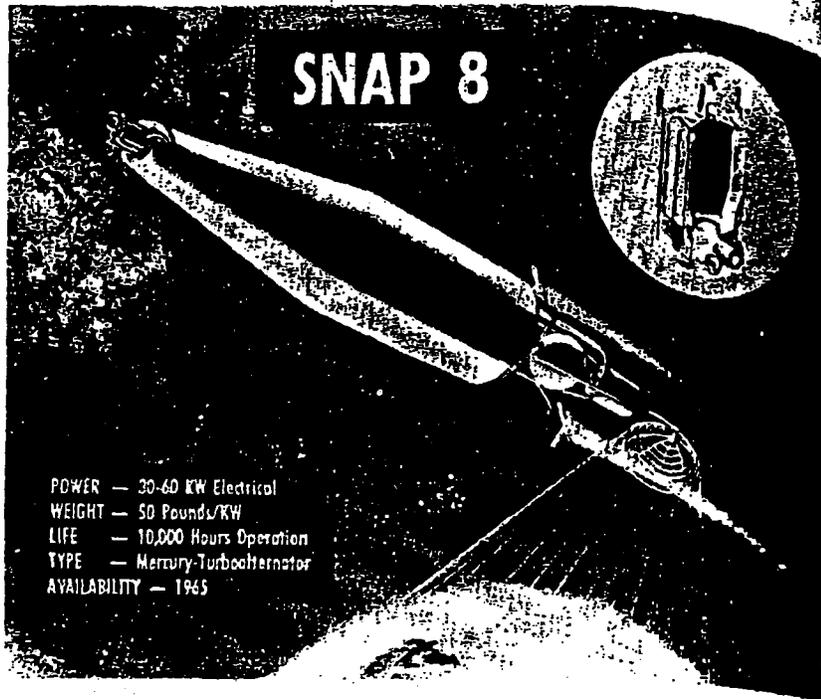
Orbital flight tests of SNAP-2 and SNAP-10A devices are anticipated in the 1963-65 time period as a joint AEC-Air Force effort under the SNAPSHOT program, which is designed to demonstrate the feasibility of use of small compact reactors in space. The reactor power systems will be launched in an inert condition and will be started up when a long-lived orbit is established.

SPACE PROPULSION REACTORS

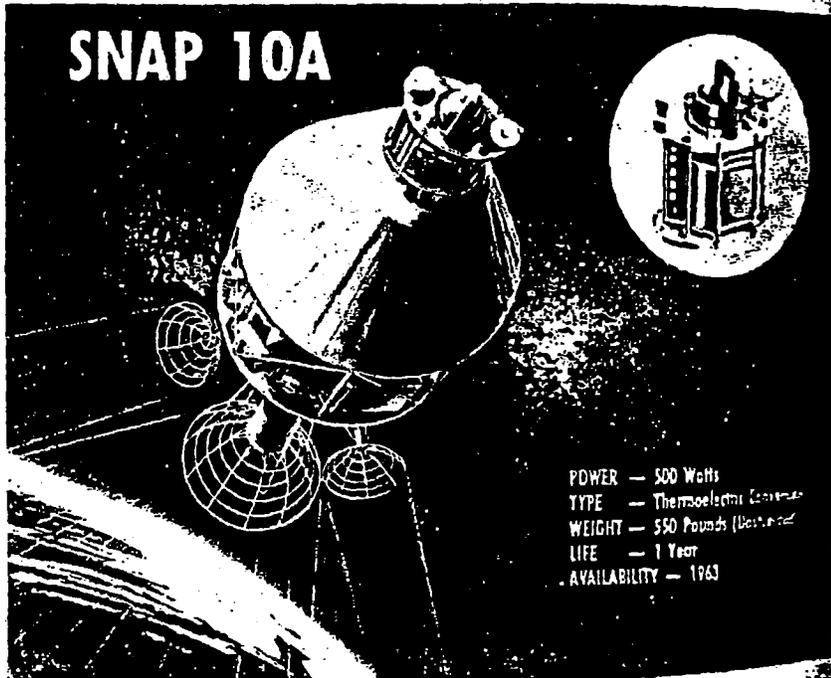
The Project ROVER nuclear rocket program, conducted by the Commission jointly with the National Aeronautics and Space Administration (NASA), has as its ultimate aim the development of nuclear propulsion systems for manned or unmanned space exploration. Nuclear systems have significant advantages over chemical systems, particularly for the longer space missions, because of their high specific impulse (thrust per pound per second of propellant).

The ROVER program was started by the Commission at the Los Alamos Scientific Laboratory in 1955. After an initial period of development work, a basic complex of test facilities was constructed at the Nevada Test Site for the assembly, test, disassembly, and post-examination of experimental reactors. KIWI-A, the first of

5007213



Power in Space. The SNAP-8 device drawing above will be a reactor based electric conversion system producing 30 or 60 electrical kilowatts for the Joint Commission-NASA space program. Drawing below shows the SNAP-10A which will produce 500 watts of electricity for the Commission-Air Force space program. Both of the SNAP devices are being developed by Atomic Energy International under Commission contract. The SNAP units are shown in the background of the

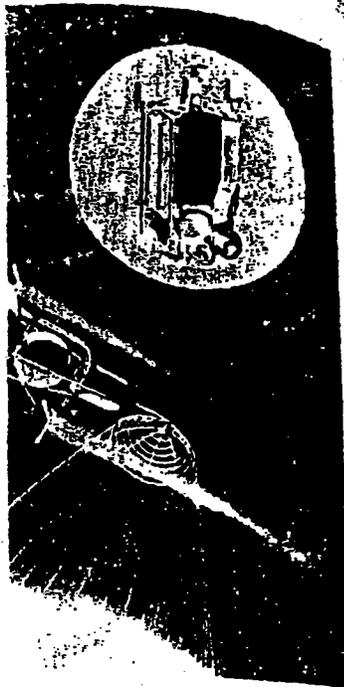


series of non-flyable experiments. The SNAP-8A Prime and KI-10A were tested in July and October 1961. The SNAP-8A permits reasonable performance reactor tests. The primary objective is to demonstrate nuclear power consistent with assumed flight. A major objective for Rocket Vehicle initial in-flight test is the 1966-67 period.

The SNAP-8A will be in an upper-stage vehicle would be like the nuclear engine used for firing. The path is controlled so that it will hit its target impact. The major technical modifications to the SNAP-8A are being done at Site (NTS) for the next step in the development. Changes to the reactor include the use of the first three stages of the first three stages of hydrogen which will be the first liquid hydrogen engine. The first liquid hydrogen engine tests, will take place in 1961 included modification, partial construction on the first engine, Assembly, and engineering of :

In July, the Joint Commission which manages the SNAP-8A General Corp. for the SNAP-8A rocket engine used in the SNAP-8A effort. Westinghouse and Aerojet-General and Westinghouse and Westinghouse A engine, assist in certain tasks, assist in the SNAP-8A plan for development tasks.

5007214



g above will be a reactor turning electrical kilowatts for the jet below shows the SNAP-10A unit the Commission-Air Force space ing developed by Atomic Inter. AP units are shown in the lower



POWER — 500 Watts
 TYPE — Thermoelectric Conversion
 WEIGHT — 550 Pounds (Unassembled)
 LIFE — 1 Year
 AVAILABILITY — 1963

series of non-flyable experimental reactors, was tested in July, 1959. KIWI-A Prime and KIWI-A3, improved versions of KIWI-A, were tested in July and October 1960, respectively. The success of these tests permits reasonable expectation of rapid technical progress toward high-performance reactors.

The primary objective of the nuclear rocket propulsion effort is to demonstrate nuclear rocket flight as early as is technically feasible and consistent with assurance of safety and good probability of successful flight. A major step in the development of NERVA (Nuclear Engine for Rocket Vehicle Application) to operational use will be the initial in-flight test series which may reasonably be anticipated in the 1966-67 period. It is presently planned to test a NERVA engine in an upper-stage of a Saturn-class launch vehicle. The flight vehicle would be lifted off the ground by the chemical booster, with the nuclear engine starting during flight as the chemical booster finished firing. The path of the vehicle will be ballistic, with the trajectory controlled so that the vehicle travels almost completely over water to its target impact point in the ocean.

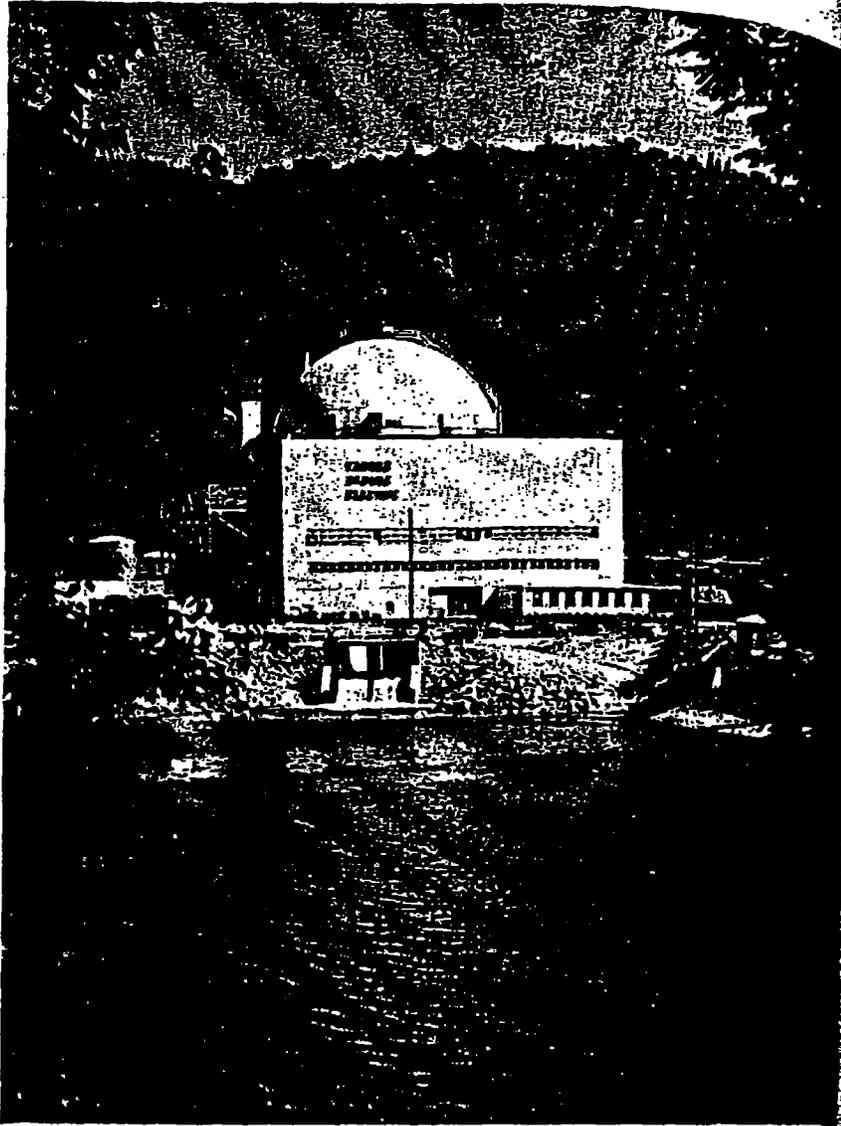
The major technical effort during 1961 was devoted to additional modifications to the KIWI ground test facilities at the Nevada Test Site (NTS) for the more complex higher-power tests needed as the next step in the development of flyable reactors; to the design changes to the reactor and technical development suggested by the results of the first three tests; and the KIWI-B1-A reactor test on gaseous hydrogen which took place on December 7.

The first liquid hydrogen test, which will initiate an accelerated series of tests, will take place early in 1962. The facilities work during 1961 included modification of one test cell for liquid hydrogen operation, partial construction of a second test cell, the initiation of construction on the first engine test stand, expansion of the present maintenance, Assembly, Disassembly (MAD) building, and the design and engineering of a MAD building for the engine development

In July, the Joint Commission-NASA Space Nuclear Propulsion Program, which manages the nuclear rocket program, contracted with Aerojet-General Corp. for initial work in the development of the first nuclear rocket engine using the reactor technology developed in the KIWI effort. Westinghouse Electric Corp. is the major sub-contractor to Aerojet-General in this work. The present work of Aerojet-General and Westinghouse includes preliminary design of the NERVA engine, assistance to the Los Alamos Scientific Laboratory in certain tasks, assistance in the design of facilities, preparation of a detailed plan for development of NERVA, and a number of research and development tasks.

5007215

SYL00069845



First PDRP Plant. First electricity generating plant to be built under the Commission's Power Demonstration Reactor Program (PDRP), the Yankee Atomic Electric Co. facility at Rowe, Mass., surpassed design expectations during its first year of operation. Constructed as a 110,000 electrical kilowatt generating station, the Westinghouse Electric Corp.-built pressurized water reactor is producing enough heat to generate 141,000 ekw. Company officials are also predicting the production of power at a lower mills per kilowatt hour cost than was anticipated. The plant is located on the Deerfield River (underground) in northwestern Massachusetts.

PROGRESS T

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SYLVANIA-CORNING
NUCLEAR CORP.

BAYSIDE, NEW YORK

TELEPHONE
FACULTY 1-1212

January 19, 1960

U. S. Atomic Energy Commission
Division of Licensing and Regulation
Washington 25, D. C.

ATTENTION: Mr. Iyall Johnson

SUBJECT: License SNM-82



Gentlemen:

This is to request amendment of our Special Nuclear Material License SNM-82 by inclusion of the attached pages, which in some case replace and in other cases supplement pages already included in our license.

Changes of a purely procedural nature, indicated in paragraphs III. C.1, III. C. 3, III. C. 10.A, and III. D.4, are to be effected by the substitution of pages III. C. 1-2, III. C. 3-4, III. C. 5-6, III. C. 10, and III. D. 3-4.

The addition of paragraph III. C. 10.D, and the addition to Appendix B of normal stations (s) and (t) and soluble stations (e), have been made in order to include certain processes in the fabrication of stainless steel type fuel elements. Paragraph IV. A. 9, has been added to cover specifically the shipment of completed fuel elements to the National Aeronautics and Space Agency in special containers of their design. An analysis of these procedures from the standpoint of nuclear safety is included in the enclosure titled "Criticality Justifications".

It is of great importance to our production operations that the requested procedures be instituted at the earliest possible time. We would, therefore, appreciate your prompt review of this application. Please do not hesitate to communicate with us on any question which may arise regarding it.

Very truly yours,

Sylvania-Corning Nuclear Corp.


G. W. Edwards,
Treasurer

Alan 1/26/60
R. J. ...
1-29-60
Inclosure
GWE/bm

Enclosures

C. Material Control

70-97
file 4.

1. Carrier Racks

All movement of uranium or uranium-containing material between Operating Stations, Storage Stations, weighing, or accountability will be made in Carrier Racks. For the purposes of this license the term "Carrier Rack", which contains the active material, will refer to either tote-trays, portable racks, or carts (carts, of course, have total of 12" border between them). Furthermore, all operating stations at Sylcor are at least 12" apart, hence there will always be one foot between any two Carrier Racks. Carrier Racks will not be stacked one upon the other, except during storage under the conditions specified below for such storage.

2. Operating Stations

The production floor will be divided into several distinct Operating Stations each of which will contain at least the machinery and/or equipment necessary for one of the operating steps described in Section II above. The borders of such Operating Stations will be clearly marked by paint or tape on the production floor in such a way that the space inside the Station will be separated by at least one foot from the space in any other station. Each Operating Station will be clearly marked with a code designating whether it is a "high limit", "normal", or "soluble" station.



111.C.1-2
1/8/60

3. In-Process Storage Stations

Material may be stored in one or more in-process Storage Stations on the production floor, which will be located in separate areas outside of the Operating Stations. A minimum of one foot spacing between the contents of adjacent units in each Storage Station in the horizontal and vertical directions by the structural nature of the storage rack. Each Storage Station will contain not more than 20 units and all Storage Stations will be separated by at least seven feet.

4. Material in Carrier Racks

Control of material quantities will be maintained by moving the special nuclear material in Carrier Racks containing only the amount of U-235 and the number of pieces specified by the Criticality Limit Report for the particular order (job) on which the material is to be used. This material will be initially weighed or counted into the Carrier Racks only by an Accountability representative at an Accountability or weighing station in accordance with the Criticality Limit Report, and the amount of material in a Carrier Rack will be changed only by an Accountability representative. All removal of scrap from Carrier Racks will be performed by an Accountability representative.

III.C.3-4
1/8/60

5. Validation of Carrier Racks

When the Accountability Representative places material in a Carrier Rack he will validate the rack for the forms of material and the types of Operating Stations for which the Criticality Limit Report specifies it may be used, based on the amount of material in the rack. This validation will take the form of clearly designating on the Carrier Rack the following:

- a. The code symbol for the type of Operating Station ("high limit", "normal", or "Soluble") at which it may be used.
- b. The form or forms (for example ingots, slabs, plates, etc.) in which the material may be handled without affecting the criticality limit.

6. Operating Rules

All operations, except weighing when it is performed by Accountability, will be subject to the following operating rules:

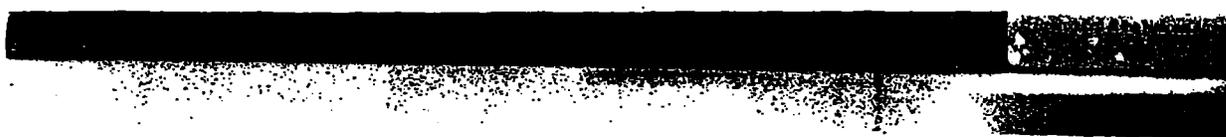
- a. Only one Carrier Rack will be brought into an Operating Station at one time, except as specifically provided in Section 9 - Special Rules - below.
- b. The contents may be removed from the Carrier Rack and worked on only within the physical boundaries of an Operating Station.
- c. All of the original contents of the Carrier Rack (including the scrap generated by the operation, but not including

III.C.4-6
11/25/58

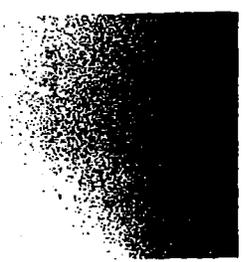
10. Control of Etching Solutions

- a. Except as set forth in paragraphs h and g below, the following procedures will be used to control etching solutions: In cases where uranium-containing material is immersed in caustic or acid solutions which could dissolve uranium (soluble steps), every effort will be made to insure that the solution does not etch deep enough to dissolve any of the uranium. If, as rarely happens, the clad material is etched away and clad penetration is noticed when the material is removed from the solution, a chemical analysis of the solution will be made to determine the amount of dissolved U-235 before any further etching is performed. Furthermore, all caustic and acid solutions used for clad material will be checked daily for traces of U-235. Upon such chemical analysis any solution containing over 50 grams of U-235 will be rejected. Such solutions will be held for recovering and not used for further etching.
- b. Pickling and brightening of unclad billets will be performed in an acid solution contained in a stainless steel tank 4" square in cross-section and 30" long. The chemicals in this tank will be changed before 50 grams of U-235 have been dissolved. This will be controlled by performing a rate-of-dissolution or other process control test on each new batch of acid and by logging the number of pieces that pass through the bath.

III.C-10
1/8/60

- 
- c. Stripping of steel sheaths from zirconium-clad rods will be performed in acid solution contained in a tank of 6" x 4" cross-section. The chemicals in this tank will be changed before 50 grams of U-235 have been dissolved. This will be controlled as in paragraph b above.
- d. The descaling operation on stainless steel type plates will be done in a solution of nitric-hydrofluoric acid. Up to 21 plates may be processed at any one time. This solution will be checked for traces of uranium-235 in accordance with paragraph a above.

III-C-10
1/8/60



cans and drums will be stored in this area with spacing of at least one foot edge to edge. This caged area will be located in or adjacent to the production area in Building 9.

4. Auxiliary Storage Area

A special storage area will be erected in Plant B and Building 9 for the storage of some raw material, in-process material, and scrap. The storage area will be under the supervision of Accountability or an Accountability representative. Material will be stored on continuous shelves with one foot separation between storage stations maintained by marking on the shelves as specified for the vault above. The amount of material stored in each station will be determined by Appendix B.

9. Fuel Elements - NASA Type

Finished NASA fuel elements to contain a maximum of 168 grams of U-235 per element will be shipped in special aluminum containers with over-all dimensions of 24.4" in width, 5.1" in height, and 3' 10" in length. Each shipping container will be packed with up to six elements (total content 1008 grams of U-235). Arranged in one row, each row is separated from an adjacent row by 20 mils cadmium. A shipment may contain five such shipping containers, constituting a maximum of 5,040 grams of U-235 in total.

11
IV.A.4
1/8/60

APPENDIX B

<u>Form of Material</u>	<u>Limit - Grams Contained U-235</u>	
	<u>A. Enrichment</u> <u>< 30%</u>	<u>B. Enrichment</u> <u>> 30%</u>
I. High Limit Stations:		
a. Tightly Packed Plates	*	4,000
b. Pressed UO ₂ Compacts	*	1,000
c. Melt Charge	16,000	
d. Ingots (Billets) of 1" Minimum Diameter	16,000	
e. Melt Charges or Ingots in covered Container, in Transit	16,000	
f. All other forms		LIMITS AS IN II BELOW
II. Normal Stations:		
a. Melt Charge	8,000	2,000
b. Ingots (Billets) of 1" Minimum Diameter	8,000	2,000
c. Ingots (Billets) rolled into slabs at least 0.1" thick	*	2,000
d. Slabs less than 0.1" thick	*	1,000
e. Punched Cores at least 0.1" thick	*	2,000
f. Punched Cores less than 0.1" thick	*	1,000
g. "Picture Frames" containing Cores at least 0.1" thick	*	2,000
h. "Picture Frames" containing Cores less than 0.1" thick	*	1,000
i. Plates containing Cores at least 0.1" thick	*	2,000
j. Plates containing Cores less than 0.1" "	*	1,000
k. UO ₂ Compacts, pressed and sintered	*	1,000
l. Rods at least 0.15" in diameter	2,000	
m. PROX Subassembly: Array of rods 0.15" diameter spaced approximately 0.05" apart	6,000	
n. Solid Scrap	*	1,000
o. UO ₂ Powder	*	330
p. UO ₂ Compacts, unsintered	*	330
q. UO ₂ Pellets, pressed and sintered	*	1,000
r. Fines, chips, and turnings	400	330
s. Stainless Steel Plates, any thickness	*	1,100
t. Stainless Steel Plate-type Element in Nitric Acid Cleaning Bath	*	550
III. Soluble Step Stations:		
a. Plates	*	330
b. Rods	400	
c. Billets of 1" Minimum Diameter in Pickling and Brightening Bath (Section III.C.10.b.)	800	

Limit - Grams Contained U-235

	A. Enrichment <u>30%</u>	B. Enrichment <u>30%</u>
d. Zirconium-Clad Rods of 0.15" Minimum Diameter in Steel-Stripping Bath (Section III.C.10.b.)	1,000	
e. Stainless Steel Plates in Nitric- Hydrofluoric Acid Descaling Bath	*	660
IV. Storage by Accountability:		
a. Punched Cores in Dessicator	*	2,400
b. Sintered Compacts in Dessicator	*	2,400
c. Metal Derbies or Buttons Containing over 250 g. U-235 each	8,000	
d. All other forms		LIMITS AS IN II ABOVE

*Note: Where limits do not appear in Column A the limits in
Column B shall apply.

70-97
File G

CRITICALITY JUSTIFICATIONS

NORMAL STATIONS

s) Stainless Steel Fuel Plates, Each Containing up to 31 grams U-235 - 1100 grams U-235

The one group analysis (see calculation No. 1) performed on S.S. type plates predicted a minimum critical mass of 3.6 kg with no credit taken for boron in each plate. Experience shows that boron poison in this type of plate would increase the critical mass by at least a factor of 2. This agrees with a critical loading of 7.4 kg obtained experimentally with stainless steel plates similar to those discussed herein except that they contain boron poison. There is further agreement with experimental results when the uranium alloy portion, with a minimum thickness of 20 mils, is compared with an equivalent surface-to-volume ratio of spherical pieces. The minimum critical mass is about 3.5 kg with no credit taken for the poisoning effect of stainless steel or boron (see page F-17 - ref. 1). Consequently, a 1.1 kg limit has been selected as a normal station, with the usual double batching safety factor.

t) Chemical Cleaning of 1 Stainless Steel Element in Nitric Acid-550 grams U-235

Chemical cleaning of one stainless steel element in nitric acid is considered a normal operation because stainless steel is not attacked by nitric acid (rate of dissolution is .001 inch per month). However, it was felt a lower limit of 550 grams would suffice. Furthermore, all plates are alpha tested to detect any clad rupture before they are assembled into elements and hence the problem of inadvertently etching into the uranium stainless steel alloy is virtually eliminated.

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SOLUBLE STATION

e) Descaling Of Stainless Steel Plates - Maximum of 21 Plates
Containing 660 Grams U-235 in total

This is a cleaning operation which is performed in a solution of nitric hydrofluoric acid. Test performed at Sylcor using nitric hydrofluoric acid at 140°F, indicated acid etches stainless steel at the rate of 0.0025 inches in 45 minutes. Since the dissolution rate is very low, a 660 gram limit per plate is considered safe. Furthermore, 21 plates will fit into a special rack which is so designed that only one such rack may fit into a tank. This automatically fixes the upper limit of the batch size to 21 plates. The criticality problem of steel plates was discussed under Normal Station (s), where the minimum limit was found to be 3.6 kg. In order to maintain maximum safety, all personnel in this station will be strictly instructed never to leave any plates in this solution unattended.

SHIPMENT OF NASA FUEL ELEMENTS IN SPECIAL CONTAINERS -
168 grams of U-235 per element - maximum of 30 elements -
5040 grams per Shipment

Containers to be used by Sylcor will be supplied by NASA and will contain up to six elements each. Each element will fit into a square aluminum tube which is coated with .010 inches cadmium on the exterior surface. This assures that there will always be .020 inches cadmium between any two rows (see enclosed NASA blueprint No. CF-115264). The enclosed two group analysis (see Cal-

To be filed in Reports File

1/8/60

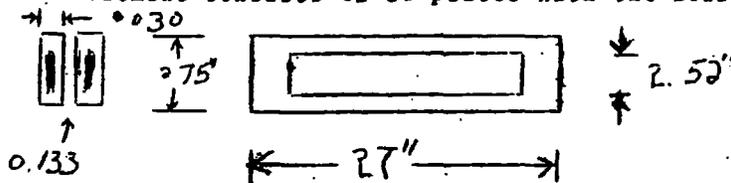
ulation No. 2) supplied by NASA and validated by Sylcor was performed for different arrays; however, this request covers a 5 x 6 array, i.e. six containers in each of five layers. This particular geometric arrangement has an effective multiplication (k_{eff}) of .85 when completely flooded and hence is safe from a nuclear standpoint.

1/8/60

Calculation No. 1.

Criticality Calculation for Stainless Steel Fuel Elements (APPR)

Each element consists of 18 plates with the following dimensions:



Each fuel plate core contains 30.17 grams U-235 and 104.9 grams stainless steel, on the average.

Let: V_{235}^1 represent the volume fraction of U-235 in one plate
 V_{SS}^1 " " " " " stainless steel in one plate
 V_a^1 " " " " " alloy " " "
 V_{H_2O} " " " " " H_2O in system
 V_{235} " " " " " U-235 " "
 V_{ss} " " " " " SS " "

$\frac{M/W}{1 + \frac{M}{W}}$ = the volume fraction of metal in system

Since the plates in this element have a fixed spacing relative to each other, only one M/W ratio is considered, that is,

$$\frac{M}{W} = \frac{\text{plate thickness}}{\text{plate separation}} = \frac{.030}{.133} = 0.226$$

$$\frac{\frac{M}{W}}{1 + \frac{M}{W}} = 0.184$$

The volume occupied by 30.17 grams U-235 in a plate core is 30.17/18.7 or 1.614 cubic centimeters. The volume occupied by 104.9 grams stainless steel in the same core is 104.9/7.94

* These symbols apply to all calculations in this application.

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Calculation No. 1 (contd)

or 13.2 cubic centimeters. Thus, the volume ratio of U-235 to stainless steel in the core alloy is 1.614/13.2, or 0.122. From this, the volume fraction of U-235 in alloy is found to be 0.1095.

$$\begin{aligned} \text{Now } V_a^1 &= \frac{\text{volume alloy}}{\text{volume plate}} \\ &= \frac{21.5'' \times 2.52'' \times 0.020''}{27'' \times 21.72'' \times 0.030''} = 0.491 \end{aligned}$$

$$\begin{aligned} \text{Hence } V_{235}^1 &= V_a^1 \times \text{Vol. fraction of U-235 in alloy} \\ &= 0.1095 \times 0.491 = 0.0537 \end{aligned}$$

$$\begin{aligned} \text{and so, } V_{-235} &= V_{235}^1 \times \frac{M}{1 + \frac{M}{W}} = 0.0537 \times 0.184 \\ &= 0.0098 \end{aligned}$$

$$\begin{aligned} \text{It follows that } V_{ss}^1 &= 1.0000 - 0.0537 = .9463 \end{aligned}$$

$$\text{so that } V_{ss} = 0.946 \times 0.184 = 0.1725$$

Finally, $V_{H_2O} = 1.000 - (0.0098 + 0.1725)$. Thus, for our system, $\sum_a ss = 0.0454$

$$\sum_a (235) = 0.280$$

$$\sum_a (H_2O) = 0.035$$

$$\sum_a (\text{total}) = 0.3604$$

The thermal utilization

$$\begin{aligned} \text{is } f(235) &= \frac{\sum_a (235)}{\sum_a (\text{total})} \\ &= \frac{.280}{.3604} = 0.774 \end{aligned}$$

$$K_{\infty} = 2.07 \times 0.774$$

$$= 1.66$$

1/8/60

Calculation No. 1 (contd)

$$\sum_{ss} = \frac{0.0454}{0.3604}$$

$$\sum_{H_2O} = \frac{0.035}{0.3604}$$

$$L^2 = f_{25} L_{25}^2 + f_{ss} L_{ss} + f_{H_2O} L_{H_2O}^2$$

$$= 1.0014$$

$$B_m^2 = \frac{k_0 - 1}{M^2}$$

$$B_m^2 = \frac{.67}{32.85}$$

$$B_m^2 = 0.0202$$

$$B_q^2 = \frac{2.405}{R + \delta}$$

where δ is the reflector savings. For such a system a reflector savings of 6.5 cm has been chosen (see reference 1, page 8).

$$\text{For a critical system } B_m^2 = B_q^2 .$$

$$\text{Hence } R + 6.5 = \frac{2.405}{(0.0202)^{1/2}}$$

$$R + 6.5 = 16.95$$

$$R = 10.45 \text{ cm.}$$

$$R^2 = 343 \text{ cm}^2.$$

The volume fraction of metal is .185, hence the volume of metal in this system is

$$343 \text{ cm}^2 \times .185$$

$$= 63.5 \text{ cm}^2.$$

Now each plate has a cross sectional area of .53 cm².

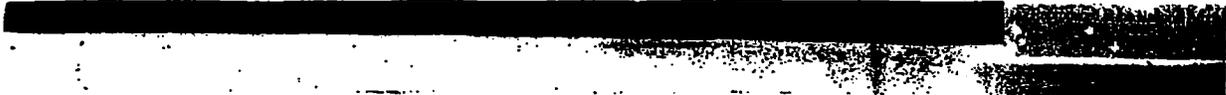
Therefore the number of plates required for criticality is

$$\frac{63.5 \text{ cm}^2}{.53 \text{ cm}^2}$$

$$= 120 \text{ plates.}$$

At 30.17 grams/plate, the loading would be 3.600 grams.

1/8/60

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- (1) "Studies in Nuclear Safety", H. F. Henry et al, K-1380,
(August 14, 1958)
 - (2) "Basic Critical Mass Information and its Application to
Oak Ridge Gaseous Diffusion Plant Design and Operation",
H. F. Henry et al, K-1019, 4th Revision, (May 23, 1958).
 - (3) "Guide to Shipment of U-235 Enriched Uranium Materials"
(p.75), Edited by H. F. Henry, TID-7019 (June, 1959).
 - (4) "A Guide to the Calculation of Criticality Limits for
Enriched Uranium", J. Chernick, NP-6500 (January 8, 1957).

(1/8/60)



Calculation
No. 7

Estimate of Safe Storage and Shipping Conditions for Fuel
Elements for the NASA Plum Brook Research Reactor

Donald Bogart and Edward R. Gotsky

Summary

The reactivity of various geometric arrays of NASA reactor fuel elements, one element in height and stacked side-by-side on a 3-inch center-to-center rectangular grid immersed in water has been estimated. A two-group equivalent bare reactor criticality equation has been employed using thermal multiplication constants evaluated for cells consisting of fuel elements separated by cadmium.

It is shown that an infinite array of elements containing 168 grams of uranium-235 per element, each surrounded by 10 mils of cadmium would have a maximum value of effective multiplication factor K_{eff} of 0.86. Hence any finite geometric array of shipping and storage containers employing this cell arrangement would be subcritical by substantial margins.

On the other hand an infinite array of fuel elements containing 250 grams of uranium-235 and surrounded by 10 mils of cadmium would be supercritical with a K_{eff} of 1.15. It is estimated that an array consisting of 10 x 6 elements would be subcritical with a K_{eff} of 0.93. Curves are presented from which K_{eff} for various arrays may be estimated for both 168 and 250 gram elements.

Calculations

New fuel elements for use in the Plum Brook Research Reactor must be shipped to the reactor site and stored in a fuel room. Partially spent elements are to be stored in the water canal. It is the object of these calculations to estimate the reactivity of various fuel element configurations immersed in water. Fresh fuel elements containing 168 grams and 250 grams of fully-enriched uranium per element have been considered in various arrays in which

- a) no cadmium is used between elements
- b) 20 mil cadmium is used between rows of elements
- c) 20 mil cadmium is used around each element
- d) 10 mil cadmium is used around each element.

The overall reactivity of the fuel element configurations have been estimated using a two-group equivalent bare reactor criticality equation. This equation has satisfactorily estimated the reactivity of various core configurations for the Bulk Shielding Reactor at Oak Ridge. The Bulk Shielding reactor employs 140 gram fuel elements which are very similar to the Plum Brook elements. This calculation method was used for fuel element arrays in which no cadmium is used between elements.

For fuel element arrays in which cadmium is used, the effective fuel utilization is incorporated in the thermal multiplication constant K_{th} evaluated for a cell using elementary thermal diffusion equations and uniform spatial slowing down sources. For the case of 20 mil cadmium between rows of fuel elements, the cell was taken as a slab of half of a fuel element row and a 10 mil cadmium thickness; for the cases of cadmium around each fuel element, the cell was taken as a cylinder having the same cross sectional area as the fuel element with cadmium ^{half-}thicknesses of 5 mils or 10 mils on the perimeter. From the flux solutions in the cell, the value of \bar{K}_{th}

is obtained as

$$K_{th} = \frac{\int_0^R \Sigma_f(r) \varphi(r) dr}{\int_0^R \Sigma_a(r) \varphi(r) dr}$$

The flux solutions for the cadmium covered equivalent volume cylinders are shown in figure 1 for both 168 and 250 gram elements with 5 mil cadmium half thickness and for the 168 gram element with 10 mil cadmium half thickness. The solutions are normalized to a uniform slowing down source per unit volume of fueled region. The cadmium causes the flux to be depressed in the fuel element; the ratio of flux at the center of the fuel element to flux at the face of the cadmium is about a factor of five. The strong absorption in the cadmium results in further attenuation of the flux by a factor of about 10 for the 5-mil cadmium half thickness. Thicknesses of cadmium greater than 10 mils are seen to have no further effect on the fluxes in the fuel element.

The two-group criticality equation used for the effective multiplication factor K_{eff} is

$$K_{eff} = \frac{K_{th} P_{th}}{(1+L_f^2 B^2)(1+L_{th}^2 B^2)} + \frac{K_f (1-P_{th})}{(1+L_f^2 B^2)}$$

where

- K_{th} thermal multiplication constant
- K_f epithermal multiplication constant
- P_{th} fraction of neutrons that slow into the thermal group
- L_f^2 mean square slowing down distance
- L_{th}^2 mean square thermal diffusion distance
- B^2 geometric buckling of equivalent bare reactor

The geometric buckling for a rectangular parallelepiped is

$$\begin{aligned} B^2 &= B_a^2 + B_b^2 + B_c^2 \\ &= \left(\frac{\pi}{a+2\delta_a}\right)^2 + \left(\frac{\pi}{b+2\delta_b}\right)^2 + \left(\frac{\pi}{c+2\delta_c}\right)^2 \end{aligned}$$

where

a, b, c are the sides of the parallepiped.

$\delta_a, \delta_b, \delta_c$ are the respective reflector savings

Reflector savings for water moderated assemblies reflected by infinite thicknesses of water are closely approximated by

$$\delta = \frac{D_f^{core}}{D_f} \sqrt{L_f^2 + L_{th}^2}$$

where

D_f fast neutron diffusion coefficient.

A listing of two-group parameters employed is given below. The epithermal neutrons are taken to be oblivious of the cadmium; this underestimates the effectiveness of the cadmium because of the epithermal neutrons between thermal and cadmium cutoff energies which are in fact absorbed but are considered to slow into the thermal group and produce additional fissions.

Core Parameter	168 gm elements	250 gm elements
L_f^2 (cm ²)	64.0	64.0
L_{th}^2 (cm ²)	3.31	1.94
D_f (cm)	1.32	1.26
K_f	1.566	1.678
P_{th}	0.844	0.744
K_{th} (no Cd)	1.675	1.810
K_{th} (slab-20 mil Cd)	1.072	1.332
K_{th} (cylinder-10 mil Cd)	0.810	1.134
K_{th} (cylinder-20 mil Cd)	0.838	-----
δ (cm)	7.23	6.92

Water Parameter

L_f^2	(cm ²)	31.4
L_{th}^2	(cm ²)	8.2
D_f	(cm)	1.15

Cadmium Parameter

D_{235}	(cm)	0.00215
L_{235}	(cm)	0.000174
$\Sigma \sigma_{a,235}$	(barns)	2980

With these parameters, the values of K_{eff} for any configuration of fuel elements may be estimated. Inasmuch as the fueled region of a single element is 62.6 cm long and the end pieces extend the element to a length of about 110 cm, the closest approach of fueled regions end-to-end is about 47 cm. This distance is large enough to uncouple fuel elements stacked end-to-end. An estimate of the reflector savings for the water-filled aluminum end boxes gives a value of 7.7 cm; this value establishes the vertical buckling of the fuel element arrays considered as

$$B_a^2 = \left(\frac{\pi}{62.6 + 15.4} \right)^2 = \left(\frac{\pi}{78.0} \right)^2 = 0.001622$$

In shipping and storing fuel elements, a rack containing six fuel elements in a single row is proposed. This container will have walls of finite thickness that separate the fuel elements; however for purposes of these calculations, the vertical axes of the elements were assumed to lie in a 3-inch square grid. The lateral bucklings for rectangular arrays of $m \times n$ rows are therefore given by

$$B_b^2 = \left(\frac{\pi}{7.62 n + 2\delta_b} \right)^2$$

$$B_c^2 = \left(\frac{\pi}{7.62 m + 2\delta_c} \right)^2$$

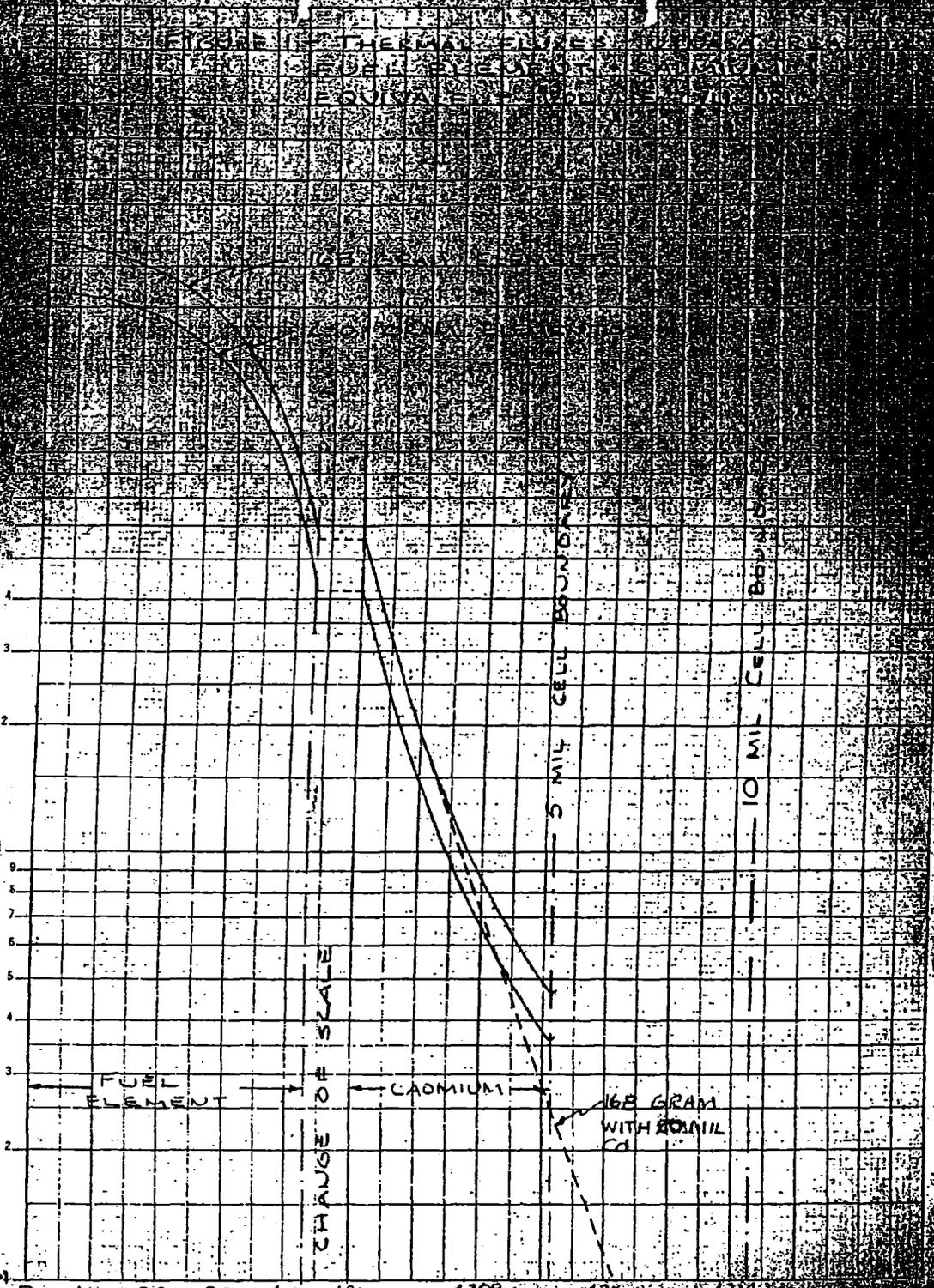
The effective multiplication factor, K_{eff} , for various $n \times n$ arrays of NASA reactor fuel elements containing 158 grams and 250 grams of uranium-235 per element are shown in figures 2 and 3 respectively. Curves for $n = \infty$ and $n = 6$ arrays are shown for the cases of no cadmium between elements, 10 mils of cadmium between rows of elements, and 10 mils cadmium about each element. The curves for $n = \infty$ for 250×250 arrays are also shown. It is realized that all of these arrays are one fuel element in height.

With no cadmium, a 10×6 array of 158 gram elements and a 7×6 array of 250 gram elements submerged in water would be critical. However, with 10 mils of cadmium about each element, a 10×6 array of 158 gram elements would be considerably subcritical with a K_{eff} of 0.86. The actual K_{eff} values are somewhat lower than the values shown because of the flux depression of neutrons at energies between effective cadmium cutoff energy and the top of the thermal neutron group. Neutrons absorbed by the cadmium in this way have been ignored in these calculations.

For arrays of 250 gram elements with 10 mils of cadmium about each element, it is seen that a 10×6 array is subcritical with a K_{eff} of 0.93 but that a $7 \times \infty$ would be critical and an effectively $\infty \times \infty$ array would be supercritical. Hence arrays of 250 gram elements must be shipped and stored in limited geometric arrays.

389-75 KUPFERL & ESSER CO.
 Sumit-Laserfilm, 3 Cycles X 10 to the 1. Inch.
 MADE IN U.S.A.

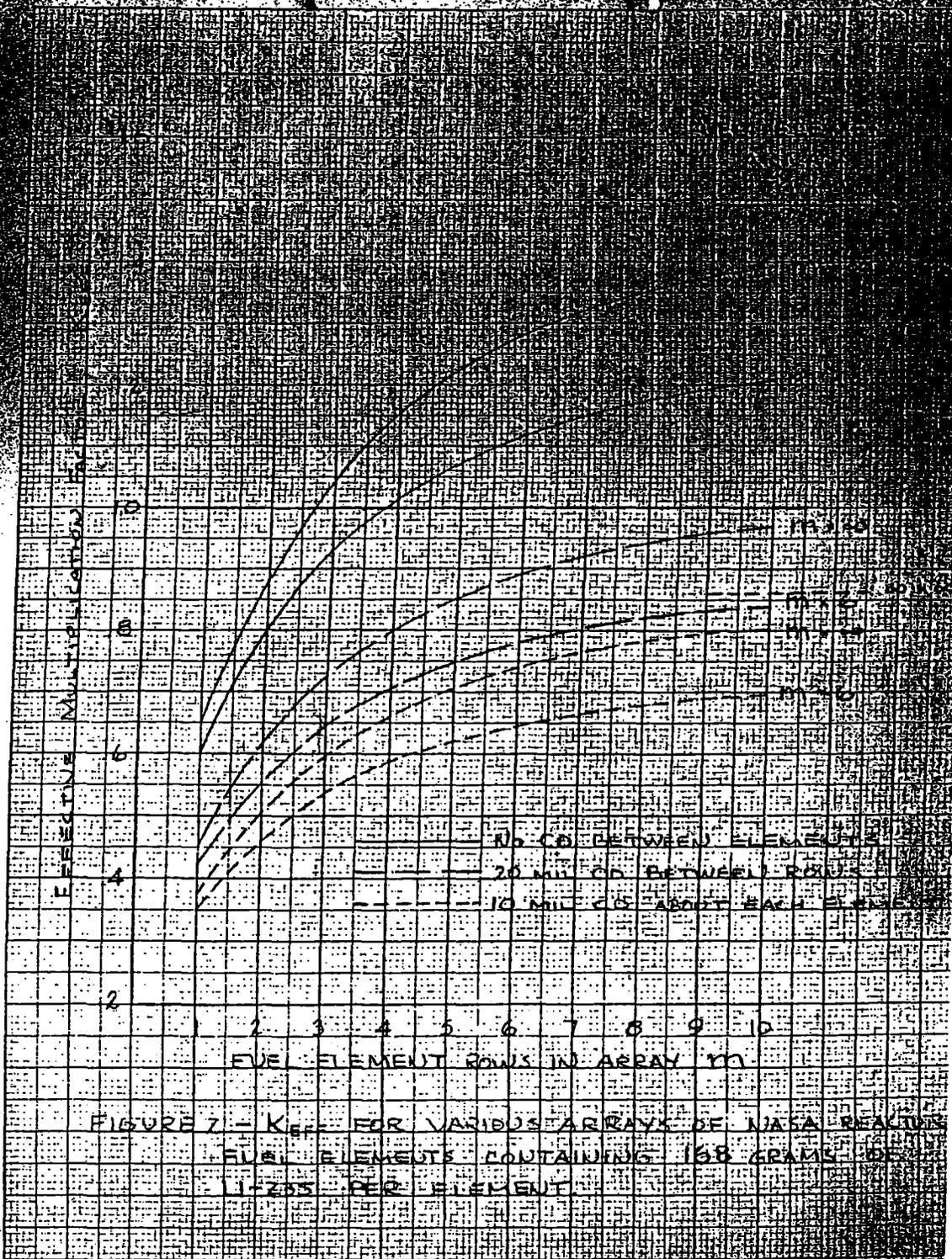
RELATIVE THICKNESS



EQUIVALENT VOLUME CYLINDRICAL CELL RADIUS

168 GRAM WITH 20MIL Cd

K-E 10 X 10 TO THE W INCH 359-12
KEUFFEL & ESSER CO.



K-E 10 X 10 TO THE 1/2 INCH 359-12
 HAVRIL & EBER CO. CHICAGO, ILL.

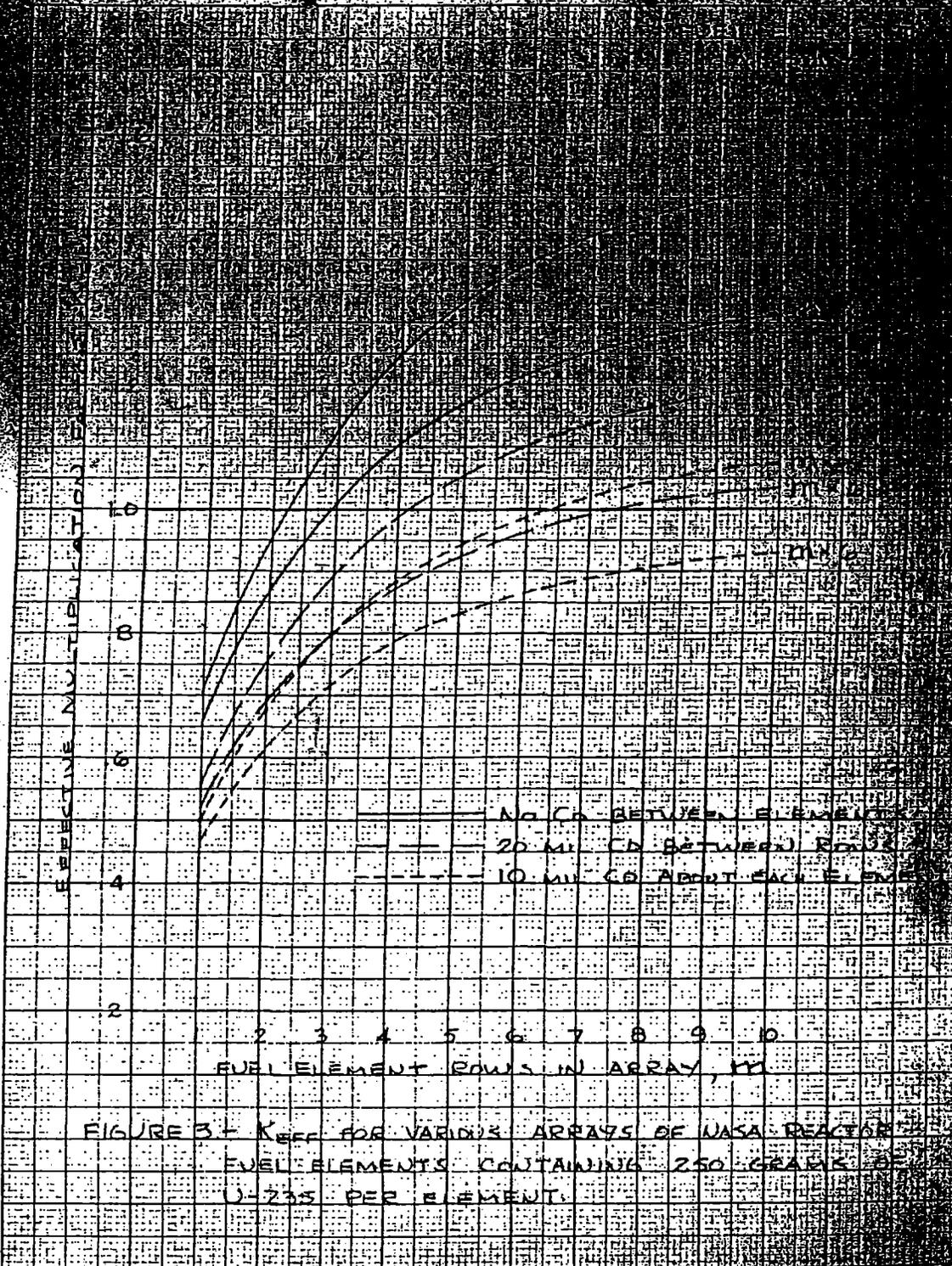


FIGURE 3 - K_{eff} FOR VARIOUS ARRAYS OF NASA REACTOR
 FUEL ELEMENTS CONTAINING 250 GRAMS
 U-235 PER ELEMENT.

NEWS From SYLVANIA

SUBSIDIARY OF
GENERAL TELEPHONE & ELECTRONICS 

SYLVANIA ELECTRIC PRODUCTS INC.
300 BROADWAY, NEW YORK, N.Y. 10006

From: Charles E. Kurtak, Area Code 212 - 551-1695 (After 5 P.M., Area Code 212 - RI 9-7951)

Release Date: MORNING NEWSPAPERS OF WEDNESDAY, SEPTEMBER 1, 1965
(6:30 P.M. EDT TUESDAY, AUGUST 31, 1965)

SUMMARY: Sylvania announces the completion of first core as part of \$1.4 million A.E.C. contract for the U. S. Navy, McMurdo Sound, Antarctica; the company's first fueling of a power reactor.

NEW YORK, Aug. 31 -- Sylvania Electric Products Inc. today announced the completion of its initial nuclear fuel for power reactors, following delivery of the first core as part of a \$1.4 million Atomic Energy Commission contract for the U. S. Navy PM-3A Reactor at McMurdo Sound, Antarctica. Sylvania is a subsidiary of General Telephone & Electronics Corporation.

The fuel core was manufactured at Sylvania's SYLCOR Division in Hicksville, N. Y. Gerald L. Moran, Sylvania Senior Vice-President and Division General Manager, in announcing the delivery of the core today said, "the completion of this order is another milestone for the SYLCOR Division, which has long been one of the leaders in the research, development and production of fuels for research reactors, throughout the world."

- MORE -

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SYL00057684

The second phase of the AEC contract is for an identical power fuel core for the U. S. Air Force Facility, Sundance, Wyo. Completion and delivery of this core is expected to take place in November, Mr. Moran said.

The fuel cores have been designed to last approximately $2\frac{1}{2}$ years, Mr. Moran stated. Both reactors are designated as portable medium power plants and began operation in 1962. The McMurdo Sound reactor is capable of supplying $1\frac{1}{2}$ megawatts of electrical power. The Air Force reactor can generate one megawatt of power.

Mr. Moran said that the manufacturing techniques of the two cores are similar. Each consists of approximately 31 kilograms of U-235 contained as uranium oxide in a stainless steel matrix clad in stainless steel tubes. The uranium is 93 per cent enriched. Tubes in the fuel cores have an outside diameter of 0.506 inches and an inside diameter of 0.417 inches. Each tube is 33.25 inches long. A total of 774 fuel tubes are used in each core, he said.

Leader in Test Fuels

The SYLCOR Division of Sylvania manufactures nearly every type of fuel elements in use today and has produced more elements for test reactors than any other company in the world. Up to the present time, the division has fueled 54 reactors in 14 different countries.

The division began in the corporate laboratories at Bayside, N. Y., in 1944, (now known as General Telephone & Electronics Laboratories Incorporated). At that time, a group was formed comprised of metallurgists highly skilled in powder metallurgy technology.

Following the receipt of several contracts from the Atomic Energy Commission to investigate manufacturing nuclear fuels through powder metallurgy techniques, the group's work outgrew the proportion of the rest of the laboratory and in 1950 Sylvania formed its Atomic Energy Division.

- MOPE -

In February 1952, the division opened a plant in Hicksville, N. Y. for the purpose of producing nuclear elements for use in the government's plutonium producing reactors at Savannah River, S. C. Throughout this time, research work continued towards the production of nuclear fuels for commercial reactors.

In April of 1957, Sylvania and the Corning Glass Works consolidated their nuclear energy activities and formed the Sylvania-Corning Nuclear Corporation, gaining the title of "the world's first nuclear fuel company".

This jointly-owned organization, a logical and carefully planned outgrowth of the pioneering activities of both companies in the nuclear field, combined the metallurgical experience of Sylvania with the ceramic experience of Corning and provided one of the most effective combinations of skills and facilities in the industry.

In 1961, Sylvania purchased the Corning interest and once again the group became a division of Sylvania -- the SYLCOR Division as it is known today.

Types of Elements

As the world's first nuclear fuel company, SYLCOR has accumulated a wealth of experience in the development and manufacture of metallic, ceramic and cermet types of fuel elements; and also has conducted extensive developmental work in the field of high-temperature metals.

SYLCOR pioneered investigations in high-temperature metallurgy and high purity metals, such as research programs in uranium, thorium, niobium and niobium base alloys; and also has accumulated extensive experience in the fabrication of fuel elements containing uranium and uranium oxide -- all of which has resulted in a number of significant contributions to nuclear technology.

###

#321 (65)

J. Taylor

USARC Contract AT(30-1)3183
Uyler Project #3437 PB-1

June 5, 1965
Ref: 736-65, JRG: fcy

Mr. Tom Adler
U. S. Atomic Energy Commission
375 Madison Street
New York 14, N. Y.

Dear Mr. Adler:

Subject: PM-3 Project - Fuel Loading

We have received the fuel loading data on the pins (9) elements
in production batches XAV through XAB2. Attached please find
the Fuel Loading Report showing the pertinent data and the com-
pliance statistics. The report consists of two pages. The page
showing the statistics that include elements Nos. X4D33 and
X4D34 and the other page showing the statistics without these
two elements.

The reports indicate that through lot XAB2, we have 95% confidence
that 99% of the elements are between:

90-10 - 41.03 g. U-235 (with X4D33/34)
90-10 - 41.04 g. U-235 (without X4D33/34)

The 95% confidence limits as calculated above are based on the
assumption, because of sampling variability, that the average and
standard deviation as calculated from the samples are not the
true average and standard deviation of the process. Accordingly,
the K factor is made sufficiently large (larger than 2.575 called
K_{0.95} when the true average and standard deviation are known) to
assure the person estimating that the limits as expressed will
allow him to be correct 95% of the time (if such sampling programs
were to be repeated).

Mr. Ira Adler

-8-

June 8, 1955

100-90460-100

If we were to accept the average and standard deviation as calculated to be truly representative of the process (and this could well be), the limits would be as follows:

40.11 - 2.575 (.299) = 40.11 - 0.77 = 39.34 = 40.185 (1.52)

40.11 - 3.575 (.284) = 40.11 - 1.01 = 39.10 = 40.185 (1.52)

John H. Drano
Manager
Quality Control

JPD:top
acc

cc: Mr. DeHosier (2)

bcc: W. R. Santoro
G. LaPier
G. Edd
J. Nylin
M. Echlin

Ext. 388

CO. I:WGB

5 MAR 1965

Sylvania Electric Products
Sylsor Division
Contingee Road
Richsville, L.I., New York 11801

Attention: Mr. William R. Mandaro, Site Manager

Gentlemen:

This letter relates to the discussion Mr. Browne of this office held with Mr. LaPier and Mr. Grieb following the February 18, 1965 inspection of activities authorized under Special Nuclear Material License No. SNM-82.

As noted during the discussion, it appears that certain of your activities were not conducted in full compliance with conditions of your license. The items and references to the pertinent requirements are listed in Item 5 on the attached Form ABC-592.

The purpose of this letter is to give you an opportunity to advise us in writing of your position concerning these items, of any corrective actions you have taken or plan to take with respect to them, and the date on which all corrective action was or will be completed. Your reply should be sent to us within 20 days of the date of this letter to ensure that it will receive proper attention in our further evaluation of this matter. It is noted that the deficiency reported as Item 5d, was corrected at the time of the inspection, and no further correspondence is needed regarding this item.

RECEIVED
MAR 11 AM 12 51
ATOMIC ENERGY COM. REG. DIV. MAIL SECTION

- 2 -

Should you have any question concerning this matter, you
may communicate directly with this office.

Very truly yours,

Robert W. Rixman, Director
Region I, Division of Compliance

Enclosure:
Form AEC-592

cc: Mr. Grant LaFier, w/enclosure
Mr. Henry Grieb, w/enclosure

bcc: CO:HQ
SLR:EQ
Source & Special Nuclear Materials
Branch, DML
Criticality Branch, DML
CO:III
CO:V

UNITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

<p>1. LICENSEE STAVARIA ELECTRIC PRODUCTS, INC. Oyster Bayville County Road Rockyville, L.I., New York 11801</p> <p>2. LICENSE NUMBER 100-21</p>	<p>3. REGIONAL OFFICE U. S. Atomic Energy Commission Region I, Division of Compliance 376 Madison Street New York, New York 10014</p> <p>4. DATE(S) OF INSPECTION February 18, 1965 (Reinspection)</p>
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5. The following activities under your license (identified in Item No. 3 above) appear to be in non-compliance with AEC regulations or license requirements, as indicated.

- Item 3 of License No. 100-23 states: "For use in accordance with procedures described in the licensee's application dated September 24, 1964 and supplements dated September 29 and October 6, 1964." The following items are not in compliance with the application:
- (a) Storage racks in the central maintenance and north maintenance areas were being used for the storage of fuel element plates, although these areas are not designated as approved storage areas in accordance with Item VI.C of the license application. Pages 49 through 60-1.
 - (b) Uranium bearing scrap, such as plates, isotopes, slabs and cores is to be stored in approved waste trays (VI.C.2b., Page 60-1). One waste tray was found in the new material storage vault which, although it had not been provided with the necessary 1" x 7" drainage slot was being used for the storage of new unfilled uranium scrap.
 - (c) Item VI.C.2c, Pages 57 through 64 defines the Uranium 235 storage conditions for the south maintenance storage area. At spot M-20, four bottles containing Uranium 235 were stored on the shelf next to the one gallon container, a practice which is not authorized.
 - (d) In-process storage conditions are defined in Item VI.C.4, Pages 36 through 60. During the inspection of February 18, 1965, it was noted that a tote box containing 7 hollow tubes of fuel core material was stored on top of a 55 gallon drum, right beside the in-process storage rack #119, a practice which is not authorized.

*Shirley
Very little
found
Wills*

Supplementary page KOR 0 attached Wills G. Brown 3/5/65
AEC Compliance Inspector Date

U. S. ATOMIC ENERGY COMMISSION
Region I
Division of Compliance

TITLE: PENNSYLVANIA ELECTRIC PRODUCTS DATE: 3 MAR 1965
Sylcor Division, Contingue Road
Hicksville, Long Island, New York
License No: SEN-82, Docket No:
70-97

Date of Visit: February 18, 1965

BY : Willis G. Browne, Inspection Specialist (Criticality)

SUMMARY

The Sylcor Fuel Fabrication Plant was inspected on February 18, 1965 by W. G. Browne, Inspection Specialist (Criticality), CO-1, accompanied by J. McBride, Director of the Division of Materials Licensing.

Four items of noncompliance were noted concerning the storage of materials containing U-235:

- (1) Storage racks in the central mezzanine and north mezzanine area were being used for the storage of reject fuel element plates, although the license does not designate these as approved storage areas.
- (2) Melt trays were to be modified with a screened 1" x 7" drainage slot before being used for the storage of uranium bearing scrap. It was noted, however, that one melt tray in the raw material storage vault was being used for storing uranium bearing scrap, although it had not been provided with the necessary drainage slot.

- 2 -

- (3) In the south mezzanine storage area at spot M-26, four bottles containing U-235 material were stored on the shelf next to the one gallon storage container, although the license specifically states that material is to be stored only within one gallon containers.
- (4) At the in-process storage rack, #119, a 55 gallon drum had been placed next to the west end of the storage rack, and a box containing seven U-235 bearing fuel elements was stored on top of the drum. This was a violation of in-process storage conditions and it was immediately corrected in the presence of the inspector.

All of the equipment modifications required by the new SNM-82 License had not been completed at the time of the inspection, although significant improvements have been made since the November 18, 1964 inspection. Drainage holes have been provided for all of the fuel element tote boxes and about half of the in-process storage racks have been provided with roofs. All, but one of the melt trays used for storing enriched uranium scrap were modified with a screened 1" x 7" drainage slot. It was noted that several melt trays used for the storage of depleted uranium were not provided with the drainage slots, so there is always the possibility that unapproved melt trays could be used for storing materials containing U-235.

There were two cases of container labeling which could confuse new employees:

- (1) In the raw material storage vault, it was noted that empty containers were stacked under a workbench, but still had labels affixed to them which indicated that they still contained enriched uranium material.
- (2) The boron weighing room does not contain any uranium bearing materials, yet radiation stickers were affixed to the containers in which the powders were being stored.

Mr. Grieb agreed to have both of these practices revised.

DETAILSI. Scope of Visit

All of the equipment modifications necessary for compliance with the approved License, ADM-82, had not been completed at the time of the last inspection on November 18, 1964. It was estimated that these equipment modifications could be completed by February of 1965, so an inspection was scheduled for February 18, 1965, to determine whether Sylvania was in compliance with the new ADM-82 License.

Persons Contacted:

Grant W. LaPier, Plant Manager of Commercial Operations
Herbert Watts, Assistant to the Manager of Commercial Operations
Henry E. Grieb, Division Safety Engineer
Richard Alto, Superintendent, Plant Operations
Frank Bohata, Accountability
Joe Kolineck, Accountability Clerk

II. Results of VisitA. Status

In a discussion with Mr. Grant W. LaPier, Plant Manager of Commercial Operations, and Mr. Henry E. Grieb, Division Safety Engineer, it was stated that production schedules for Sylvania were firm through 1965. Maximum production capacity of the plant is being required for the production of Advanced Test Reactor (ATR) and Portable Martin -3 (PM-3) fuel elements. All references are to licensed material, except when specially noted that PM-3 contract work is involved.

Mr. LaPier does not expect any interruptions in 1965 production because a new union contract had recently been signed with the Oil Atomic and Chemical Workers Union.

In February of 1965, lower production schedules for the Weapons Unit resulted in 22 job changes for the Commercial Plant Operations. Fourteen employees were transferred from the Weapons Unit to the Commercial Plant over a three week period.

- 2 -

Since there are about 65 employees in the Commercial Plant, this was a significant change in personnel and Mr. Grieb held training lectures for each group transferred to new assignments.

After a new man has attended his orientation and training sessions, he is assigned to work with a man experienced in the specific Commercial Plant operation. This "buddy" system was considered necessary for the new men because jobs in the Weapons Unit concern the production of aluminum clad uranium fuel elements for the Savannah River Plant and are completely different from the Commercial Plant Operations.

B. Process

The Sylvania Commercial Plant process for the fabrication of fuel elements is essentially a mechanical operation. Enriched uranium metal or powder is received in bird cages and stored in Building 10, as received. The uranium metal or powder is then withdrawn from Building 10 by the accountability group and divided into proper quantities for the batch production of either alloys or sintered powder compacts.

The alloys and sintered powder compacts are made into slabs or plates which are subsequently trimmed to a finished fuel plate size called a "core". The core is placed in the stamped out center of an aluminum blank called a "picture frame". This picture frame is then placed between two pieces of cladding material, called the "cover plate", and the "sandwich" is sealed together, either mechanically or by welding. The clad "cores" are then heated prior to size reduction in a rolling mill. The rolled plate ends up as a strip of metal about 2 to 3 feet long, about 1/8" thick and about 3" wide. The plates are examined by a fluoroscope to determine the core position, and then punch marked for trimming to finished plate size. After cleaning and a final inspection of the finished fuel element plates, the plates are assembled into the fuel element body, inspected, and prepared for shipment to the customer.

- 3 -

C. Plant Tour

Henry Grieb conducted the inspector and J. McBride on an inspection tour of the Commercial Plant facilities. The following items were noted and the nuclear safety items were discussed with Mr. Grieb:

- (1) According to Mr. Grieb, the accountability storage building, Building 10, is an 18' x 24' building that is locked at all times, with access controlled by the Accountability Department. At the time of the inspection it did not contain U-235 material. Empty bird cages were being stored in the building and some empty shipping containers (BK1751) were stored outside of, and adjacent to the building. There is no sprinkler fire protection in the building and the building does contain the required criticality alarm.
- (2) The raw material storage vault is a 20' x 24' concrete block vault, whose concrete ceiling is the floor of the mezzanine. The steel vault door has an opening at the bottom to prevent flooding of the vault. It was noted that there is no sprinkler fire protection in the vault and that the vault contains the required criticality alarm.

It was observed that one melt tray in the vault, containing enriched uranium scrap did not have the required 1" x 7" drainage slot. Also, the tray did not have any tag identifying its contents. Two of the melt trays used for the storage of depleted uranium had not been provided with a drainage slot.

- 4 -

There is a no smoking sign posted in the vault, yet it was observed that an ash tray on the desk was about half full of cigarette butts, and two cigarette butts and several used matches were lying on the floor near the desk. This was called to Mr. Grieb's attention, and he agreed that this practice should be corrected.

It was noted that empty button cans were being stored under the worktable in the vault, with the uranium weight slips still attached to the can. According to plant practice, these weight slips would indicate that the cans contained uranium. Mr. Grieb agreed to have these slips removed in the future.

- (3) The south mezzanine accountability storage area is a caged-in area 25' x 25', and contains three rows of storage racks. Storage racks M-124 through M-138 are used for the temporary storage of dross and scrap in five gallon covered cans. Each can contains less than 330 grams of U-235. The other racks have covered one gallon cans bolted to the shelf and U-235 bearing material is stored inside the one gallon cans.

At spot M-26, four bottles were stored on the shelf beside the one gallon can that is bolted to the shelf. A total of 250 grams of material was stored at this spot. It is a violation of the licensed storage conditions, so it was called to Mr. Grieb's attention.

Five 5 gallon cans of empty bottles were stored in the south end of the mezzanine storage area between the racks. Since the space between the storage

- 5 -

shelves should be clear, Mr. Grieb agreed to move the empty bottles to the north end of the caged-in area.

At storage spot M-85, empty containers were being stored with labels still on the cans. Only by lifting the cans could you tell whether the can is empty or full. Mr. Grieb agreed to remove the labels.

At storage spot M-88, an open book of matches was found lying on the shelf, although the area is designated as a no smoking area. Mr. Grieb removed the matches.

At storage spot M-92, depleted uranium was being stored in a melt tray that had not been provided with the 1" x 7" drainage slot.

- (4) In the middle mezzanine area, there is a caged-in maintenance storage area, approximately 15' x 50'. At the north end of this enclosure, scrap fuel element plates were being stored on the shelves of racks similar to those used for in-process storage. The area was locked, but is accessible to the maintenance men who have a key for this area. Although this middle mezzanine storage area was previously licensed as a storage area, it is not an approved storage area under the new license.
- (5) In the north mezzanine storage area, one row of storage shelves had been provided, and scrap fuel elements and in-process material was being stored on racks MS-1 through MS-65. Twenty-five additional storage spots have been provided, which have not been marked and were not being used at the time of the inspection.

- 6 -

This storage area is not approved under the license, although Mr. Grieb said it was his intention to ask for a license amendment to cover this storage area. He plans to move fuel elements stored in the central mezzanine area to this north mezzanine area. Although the storage racks are of the same design as the in-process storage racks, it was pointed out to Mr. Grieb that the use of a storage area before receiving a license amendment is not considered an acceptable practice.

Three weaknesses were noted in nuclear safety controls for the north mezzanine storage area:

- 700-44-10000
100-10000
- (a) The shelf spacer used for separating the fuel element plates is triangular in form (see page 58 of the renewal application) and loses its value as a spacer if material is stacked parallel to the inclined surface. Since fuel element plates may be stacked on edge, this can definitely become a problem. For fuel element plates listed as #3436, criticality limits posted allow 400 plates to be stacked in one storage spot. Since the tip of the triangular spacer is only $3\frac{1}{2}$ " high, the 400 plates could spill over into the adjacent compartment with no separation between storage spots.
 - (b) The triangular spacers are about 16" long, although the shelf depth is about 3'. The spacer is located near the front of the shelf and it can only be effective for about 60% of the length of the fuel element plate. If fuel elements were stacked at an angle, the back end of the fuel element plate could touch fuel elements in the adjacent storage compartment, since the back 40% of the storage slot is not physically separated from the adjacent slot.

- 7 -

- (c) There is no enclosure around the north mezzanine storage area, so any employee would have unrestricted access to the storage area.
- (6) In the powder blending operation, a dry box or glove box is used for weighing out Uranium 235 powder and combining it with stainless steel, aluminum or ceramic powders. Each control batch of powdered material is placed in sealed containers and taken to the blender which contains six receptacles for sealed containers. The total U-235 allowed in the blender is 330 grams of U-235, and this amount is normally contained in four or more sealed containers. One or two receptacles may be left empty during the blending operation to meet the 330 gram lot limit.

Mr. Grieb explained that when the blender is loaded or unloaded, only one bottle of powder is in motion at any one time. He also mentioned that only contract material is being processed through the blender at this time.

Procedures for batch control at the blender could be improved, since none of the receptacles are physically blocked off prior to loading material in the blender, and nothing physically prevents the movement of more than one bottle at a time. Reliance is placed on the operator following his handling instructions and not putting more than the proper number of bottles in the blender. The 330 gram limit is safe enough for the dry powder, but no nuclear safety analysis has been presented in the license renewal application. The only references to blending operations and limits are found on pages 25 and 78 of the application.

- (7) In the melt room area by storage rack #119, it was noted that a 55 gallon drum had been placed next to the storage rack. A tote box was stored on top of the drum and contained seven hollow tubes of fuel core material.

*Justified
in
application
H₂ and
applicable
20*

- 8 -

The storage shelf at the same level as the core material was empty and the storage spot at the floor level contained a five gallon can of depleted uranium, so no criticality problem actually existed at the time. This storage technique, however, was definitely not in conformance with licensed conditions. (see pages 56 and 60 of the renewal license application), so Mr. Grieb had the tote box removed immediately.

- (8) No uranium bearing materials are allowed in the powder weighing room. It was noted, however, that "Radioactive" labels were affixed to containers in this area indicating the presence of uranium bearing materials in the cans. Mr. Grieb agreed to have these labels removed.

Several melt trays which did not have the 1" x 7" drainage slot were noted in the powder weighing room.

- (9) At the two hot rolling mill stations it was noted that two melt trays were being used for storing oil. Mr. Grieb agreed that other containers could be used for this purpose.
- (10) Fuel element plate cleaning is accomplished by using caustic and acid etching baths. A maximum of 330 grams of U-235, as fuel element plates, is normally allowed in the cleaning-tank area. According to Mr. Grieb, the etching process had not resulted in any uranium contamination of the etching solutions to date.
- (11) An ultrasonic scanner is being used to locate discontinuities in the bonding of fuel element plates. A maximum of 1 kg of U-235 or 33 fuel element plates, whichever is the smaller, is allowed in the scanner tank at one time. The plates are laid flat on the tank bottom underwater

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and an automatic trace is plotted on a chart. Discontinuities in the chart line show the presence of unbonded areas in the fuel plate. (No nuclear safety analysis of this ultrasonic scanner has been submitted in the license renewal application. Mr. Grieb stated that at present its use will be limited to contract work only, and a license amendment will be submitted before it is used on other materials.)

D. Reports and Records

Mr. Grieb was asked for the written reports and records of all nuclear safety audits that have been performed in the past year. Two independent nuclear safety audits were performed and he reported one on June 4, 1964 and one on November 25, 1964, by Associated Engineers and Consultants, Inc., a Division of Stone and Webster. Three of the daily audits by Mr. Grieb were formalized in written reports.

In the November 25, 1964 audit report of Associated Engineers and Consultants, Inc., 16 nuclear safety items were noted and corrective actions were recommended. Five of these or similar items that should have been corrected, recurred in the February 18, 1965 inspection by the ABC inspector.

- (1) In the boron weighing room, radiation stickers were affixed to non-uranium bearing containers.
- (2) An employee was found smoking at the compacting machine.
- (3) Tote trays containing reject fuel element plates were stored outside of a locked cage in the mezzanine storage area.
- (4) The central caged-in storage area was being used for the storage of reject fuel element plates, although it is not an approved storage area, as defined in the license.

- 10 -

- (5) Bottles of U-235 material were found stored on the shelves next to the bolted down one gallon storage cans.

Mr. Grieb only prepares a written report on his daily audit of plant operation, when he notes a serious violation of nuclear safety practices. There were three notes on improper practices, from Mr. Grieb to various supervisors in his formal notification file. All of these items were subsequently corrected.

Two other files were examined, one on the six training sessions Mr. Grieb conducted, and one on the criticality evacuation drill, which was performed on October 19, 1964. Evacuation time for the drills that have been conducted range from 7 to 9½ minutes.

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee SYLVANIA ELECTRIC PRODUCTS, INC. Sylcor Division Hicksville, New York	2. Date of inspection August 2 and 3, 1965
	3. Type of inspection Reinspection
	4. 10 CFR Part(s) applicable 70

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

License No.	Docket No.	Type	Date of Issue	Expiration Date
SNN-83	70-97	Reinspection	10-21-64	11-30-67
Amend. 1			2-19-65	11-30-67
Amend. 2			4-23-65	11-30-67
Amend. 3			5-13-65	11-30-67
Amend. 4			7-7-65	11-30-67
Amend. 5			7-15-65	11-30-67
Amend. 6			7-19-65	11-30-67
Amend. 7			7-23-65	11-30-67
Amend. 8			8-10-65	11-30-67
Amend. 9			8-17-65	11-30-67

6. Inspection findings (and items of noncompliance)

The current inspection covered both the Nuclear Safety and Health Physics aspects of the licensed operations. All operations conducted by Sylcor are now being done under license. Sylcor is a fuel element fabrication facility. The inspection revealed discrepancies in nuclear safety and health physics activities and noted several items of noncompliance. Nuclear Safety and Health Physics considerations are discussed in the memo, non-compliance noted was as follows.

1. License Condition 8

Contrary to application dated September 24, 1964, as amended, page 54 Section VI.C.3 and page 52 Section VI.C.2, "Neither vault area has sprinkler fire protection and combustibles are strictly controlled", the sprinkler system piping had not removed from the mezzanine area of the accountability storage vault area, Building 4; and miscellaneous combustibles were stored in this area. (See paragraphs 31, 32 and 42 of the report details.)

(CONT'D)

7. Date of last previous inspection February 18, 1965	8. Is "Company Confidential" information contained in this report? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Specify page(s) and paragraph(s))
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- DISTRIBUTION:
- Orig - CO:HQ
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 - Cy - DML ✓
 - Cy - CO:II
 - Cy - CO:III
 - Cy - CO:V

James F. Bresson
James F. Bresson, R. J. Young, 10/15/65

Richard S. Cleveland
Approved by: Richard S. Cleveland
R. S. Cleveland, Radiation Specialist (Review), Region I
Division of (Operations office) Compliance

October 15, 1965
(Date report prepared)

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using foot to head format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of form under appropriate

ITEM 6 (CONT'D)

2. License Condition 8

Contrary to application dated September 24, 1964, as amended, pages 52-54, Sections VI.C.2, and VI.C.3, 616.85 gms of 93% enriched fuel plate scrap was stored in an undesignated area, the top of a cardboard drum located adjacent to the storage racks in the mezzanine area, Building 4. (See paragraphs 32 and 43 of the report details.) (Corrected in presence of the inspector.)

3. License Condition 8

Contrary to application dated September 24, 1965, as amended, page 31, Section V.B.4, personnel had been smoking in the uranium oxide blending area. (See paragraphs 46 and 65 of the report details.)

PART 70 INSPECTION

SYLVANIA ELECTRIC PRODUCTS, INC.
Sylcor Division
Hicksville, New York

Dates of Inspection: August 2 and 3, 1965
(Announced)

DETAILS

Summary

9. An announced inspection was made of the subject licensee's facilities on August 2 and 3, 1965, by B. J. Youngblood, Inspection Specialist (Criticality), CO:II, and J. F. Bresson, Radiation Specialist, CO:I. The purpose of this visit was to review Sylcor's radiation safety practices and compliance with License No. SNM-82 and 10 CFR 20 and 70.

10. No significant safety hazards were noted. Two items of apparent non-compliance concerning the nuclear safety practices were noted, both of which concerned the storage arrays on the mezzanine. It was observed that fuel plate scrap containing 616.85 grams of 93% uranium-235 enriched uranium was being stored in a nondesignated location (Reference paragraphs 32 and 43) and that the water sprinkler system had not been removed from the ceiling over the central array of the "upper vault" (Reference paragraphs 31 and 42).

11. The storage of large quantities of low uranium content and depleted uranium materials on some of the enriched uranium storage racks appeared to circumvent the mechanical devices which provide the edge-to-edge separation required for enriched uranium storage (Reference paragraphs 33 and 34).

12. The justification used for handling fuel plates in the ultrasonic scanning tank appears inadequate. The present practice of operating this facility with no more than 250 grams of uranium-235 at a time does not result in a nuclear safety problem. Unfortunately, their assumption that multiple slabs can be treated as a single infinite slab is a fallacy, since the multiple slabs can become partially

moderated system when they are overlapped or stacked (Reference paragraph 27). Either a mass limitation or a control system, based on a proper analysis of the ultrasonic scanner, should be adopted by Sylcor.

- 13. One item of noncompliance was noted concerning the health physics practices; smoking by personnel in the uranium oxide blending area (Reference paragraphs 46 and 65). Additionally, several other related safety items were noted; indiscriminate wearing of protective clothing in the office and eating facilities; and a fixed alpha contamination count of 2000 dpm/100 cm² on some of the furniture which indicates a personnel health hazard potential. Closer administrative control and/or a higher frequency of smear and bioassay samples appears desirable for the statistical evaluation of the contamination controls.

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 average 5000 dpm/100
 cm² fixed α

- 14. The Nuclear Safety visit covered the process flows, procedures, and philosophy concerning nuclear safety. The review was made on a broad basis since this was the inspector's initial visit to this facility.

- 15. Details of the health physics inspection are noted in paragraphs 48 and 67.

- 16. Personnel with whom significant discussions were held are as follows:

- W. Mandaro, Division Manager
- G. LaPier, Plant Manager
- H. Grieb, Safety and Security Supervisor
- R. Alto, Fabrication Engineer
- F. Bohata, Accountability Supervisor

Organization

- 17. The present Sylcor Managerial Organization is shown on Attachment No. 1. Previously, Sylcor has been divided into two operating groups. The licensed work has been handled by the "Commercial Plant" and the nonlicensed work has been handled in the "AEC Plant". Operations have ceased in the "AEC Plant" and it was indicated that Sylcor will probably sell the equipment and real estate associated with those operations.

- 18. Because of employment practices related to "seniority", most of the operators from the "AEC Plant" are being transferred to the "Commercial Plant". At present, the lowest seniority for a commercial plant operator is five years with Sylcor, but it appears that some of these five year men may be replaced when the "AEC Plant" clean-up operations allow the last of the high seniority transfers to be made. Although personnel operating the "Commercial Plant" are changing rapidly, all are experienced uranium operators, so there should be a minimum of nuclear safety operating problems that result from the transfers.

Nuclear Safety Review

Process

19. Sylcor is a fuel element fabrication facility. The present types of fuel used in their production of elements include U_3O_8 with aluminum powder and uranium alloyed with aluminum. The above compacts or alloys may have small percentages of other elements; such as, phosphorus, silicon, and various burnable poisons.

20. The fuel elements currently being processed by Sylcor are as follows:
 - A. PM-3 cores for the Sundance and McMurdo reactors. This order is expected to continue in operation for the next several months.
 - B. Advanced Test Reactor (ATR) fuel elements for the Phillips Oil Company. These U_3O_8 and aluminum powder fuel elements will be in production through the end of 1965.
 - C. Uranium Aluminum Alloy Elements for the General Electric Vallecitos Test Reactor will be made sporadically over the next twelve months.
 - D. Twelve uranium aluminum alloy fuel elements will be made during the next two months for the University of Missouri.
 - E. Some repair work will be performed during the next two months on uranium aluminum alloy fuel elements for Sweden. A previous order for R20 fuel elements for Sweden is expected to be reordered.
 - F. Uranium aluminum fuel elements for the BR2 Belgium Reactors are expected to be completed by the end of August, 1965.

21. All of the above items are to be shipped as fuel elements with the exception of the PM3 tubes which will be shipped as two cores with an extra bundle assembly (the cores are made from six bundles).

PM3 Core

22. The PM3 tubes (for elements) contain UO_2 and stainless steel powder compacts. To make each compact, the stainless steel, UO_2 , and burnable poison are added to blend bottles in increments. Each bottle of compact contains slightly greater than 80 grams of enriched uranium (93% uranium-235). Six of these bottles are positioned in a blend box, locked in place and then the blend box is rotated to homogenize the materials in the bottles.

23. A few drops of binder, which is usually a camphor and alcohol solution, may be added to the individual blends. The blend is cold pressed under a pressure of approximately 40 tons per square inch and then sintered for twenty-four hours. The sintering tends to increase density as well as solidify the compacts.

24. The compacts are placed in stainless steel picture frames and covers which are thus welded shut. After evacuation and sealing, the compacts are then hot rolled, roller leveled, cold rolled, roller leveled again, and fluoroscoped. The fluoroscopic operation on the flattened and elongated plate locates the position of the fuel within the rolled plate.
25. The ends of the plate are removed (cutting into the fuel) and the trimmed plate-edge is leached in an acid solution. Stainless steel "dead ends" are welded to the ends of the plate. The plate is then sheared lengthwise into two plates, and after leaching the edges of these plates, they are formed into tubes. An inner and outer stainless steel cylinder is placed on the formed tube and the cylinder ends are welded shut to enclose the formed tube. The tube is then isostatically pressed, drawn, and machined to the proper length. After swaging the ends of the tube, it is machined to fit the end plates for a bundle assembly.
26. Each bundle contains 129 fuel elements, 17 poison elements, and two dummy elements. Poisoned strips, made of polyethylene and boron, are placed in the tubes as they are assembled into the bundle. After the bundle has been assembled, the control rod is attached prior to the bundles being placed in the barrel.
27. Various inspection operations are performed during fuel element production. While, most of these inspections are dimensional, the ultrasonic test used to check the continuity of the fuel within the plate is of particular interest. The plates are placed side by side approximately ten inches below the surface of the water. Mr. Grieb stated that the U-235 mass is actually kept below 250 grams. But the justification used in Sylcor's license (VI.E.10-P 87) refers to an infinite $\frac{1}{2}$ inch thick slab. "TID-7016" assumes that a single infinite slab is isolated and that its thickness will not change; i.e., finite slabs must not be placed side by side to form an infinite slab without special controls to maintain the safe slab thickness, as well as to prevent the formation of an optimally moderated system. The shortcomings of the present justification were discussed with Mr. Grieb to ensure that criticality problems would not arise should there be an increase in the uranium-235 mass of the individual fuel plates or in the number of plates to be inspected any any one time. It was suggested that the justification for placing the plates within the tank should be stated on the basis of a safe operating criterion. This could be done by mass limiting the enriched uranium within the tank or by providing special fixtures which would prevent the plates from stacking while they were in water.
28. The uranium aluminum alloy for the alloyed fuel blanks is usually produced in an open furnace. When the alloy is composed of special materials that cannot tolerate normal atmospheric conditions, vacuum furnaces are used. The castings from the furnace are rolled to form alloy plates which are then cut into blanks, clad in aluminum, and rolled into fuel plates.

29. The process for making the alloy plates is essentially the same as that used for the plates made from pressed compacts. Aluminum plates are annealed in an air atmosphere and stainless steel plates are annealed in a hydrogen atmosphere. PM3 elements are the only plates where the enriched uranium is cut into or sheared during processing. The acid leaching of the PM3 plates was examined. Very little uranium is removed from each plate during the leaching.

Storage

30. Investigation of the storage area indicated several deficiencies. Two of these are considered as items of noncompliance, while the remainder appeared to be practices which could lead to poor nuclear safety habits.
31. Water sprinklers for fire protection were still attached to the ceiling over the recently added central metal storage array on the mezzanine. Miscellaneous combustibles such as wooden pallets and cardboard drums were stored in this area. The application dated September 24, 1964 as amended, page 52 states, "Neither vault area has sprinkler fire protection and combustibles are strictly controlled". The sprinkler heads in the other two mezzanine vault areas had been removed and replaced with plugs. (It is the inspector's understanding, after discussing the above items with DML, that DML assumes no water lines pass over the arrays.) DML, in a letter dated September 20, 1965, pointed out to Sylcor that the presence of water lines in storage areas was not considered in criticality evaluations, and, accordingly, such lines must be removed.
32. Fuel plate scrap, containing 616.85 grams of 93% uranium, was stacked on the top of a cardboard drum adjacent to the storage racks. When noted, this material was immediately removed from the drum and placed on one of the designated storage shelves. Miscellaneous storage such as this invalidates the limited number of units in the approved storage array.
33. Some of the storage racks are continuous horizontal shelves with inverted v-shaped dividers between each of the storage positions. This type of divider becomes meaningless when the control limit for fuel plate storage is based upon uranium-235 mass, without considering the volume necessary for the storage of a single batch. The dividers should provide at least an 8 inch edge-to-edge separation between adjacent storage units. When tote trays or pans are used for storage, the mass of U-235 which can be contained by the tray or pan is often less than 50% of the approved limit for storage batches. Since fuel plates may be stored directly on the shelves in the mezzanine, the contents of two or more trays may be dumped directly onto a shelf and thus circumvent the secondary control for the limitation of the bulk size of the material.

34. The inspector also noted bulky quantities of depleted uranium scrap stored on the enriched uranium rack. The licensee is authorized to handle depleted uranium by using the same limits as he used for enriched uranium, but it was explained that these limits must be based on the total uranium content, not the uranium-235 content.
35. Some of the inprocess storage racks appeared to be inadequately designed to prevent the storage units from coming into contact in the vertical direction, unless close administrative control is used. Fuel plate tote trays approximately 36 inches to 44 inches long are placed on shelves that consist of two horizontal, parallel bars thirty inches apart. While dividers are placed on the bars to provide the proper horizontal separation of the tote trays, a tray could easily fall between the bars of the shelf onto the trays stored below.

Emergency Procedures

36. Sylcor has three threshold detectors of the non-fire proof type which were originally provided through the facilities of Edgerton, Germeshausen, and Grier, Inc. (E.G.&G.) The problems associated with the hazard aspects of the plutonium foil being burned in a fire was discussed with Mr. Grieb. The inspector informed Mr. Grieb that these threshold detectors could be replaced with the fire proof type for approximately \$50 each by E.G.&G., but for the exact cost and replacement instructions, it would be necessary for the licensee to communicate directly with E.G.&G.
37. Horns are used as annunciators for the evacuation monitor system. The alarm is checked once a week on the off shift. Two evacuation drills are made on regular shift each year. Any time the plant is evacuated due to the criticality alarm, specific approval must be obtained from Mr. Grieb prior to anyone's re-entry into the plant.
38. The security badges contain a high and low level gamma film and indium foil. The indium foil will allow a rapid check for neutron activation in the event of a nuclear accident.
39. Arrangements have been made by the licensee with the Nassau Hospital in Mineola, New York. Mr. Grieb stated that the hospital was prepared to accept radioactively contaminated and/or irradiated personnel in the event of a nuclear accident.

Nuclear Safety Procedures

40. All nuclear safety procedures affecting SNM operators must be approved by Mr. Grieb. All batches of enriched uranium material are accompanied by route cards. These route cards indicate the operation sequence in the process and the control limits for each operation. In order for any deviation to be made on any of these route cards, the card must be specifically initialed by Mr. Grieb.

Inventory

41. The present inventory of enriched uranium is 40.138 kg of 93% uranium-235 enriched uranium and 64.409 kgs of 90% uranium-235 enriched uranium.

Summary Discussion

42. The summary discussion was held with Messrs. Mandaro, LaPier, and Grieb. Messrs. Bresson and Youngblood were both present. The existence of the sprinkler system in the upper vault storage area of the mezzanine was discussed with Sylcor management. Mr. LaPier stated that the sprinklers would be plugged and that special care would be taken to prevent combustibles from being placed in the area. (Reference paragraph 31.)
43. The miscellaneous storage of the scrap from the fuel plates was also discussed. Mr. Mandaro instructed Mr. Grieb to discuss these procedures with the accountability personnel who handle the storage in this area of the vault. (Reference paragraph 38.)
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44. The storage of large volumes of material on shelves of the storage racks was discussed. The fact that the enriched uranium was within the prescribed mass limit for each shelf was acknowledged by management to be inadequate as a nuclear safety control. The inspector pointed out the fallacy of storing strictly by mass limits. As an example, the batch limit for BNL fuel elements was listed as twenty-two while the transfer cart has a capacity for only ten fuel elements per shelf. Should other fuel elements be placed on the shelf they would fall on the floor. Mr. Grieb stated that the quantity of material would be limited to tote tray sizes when the uranium content was not more restrictive. (Reference paragraphs 33 and 34.)
45. The storage of tote trays on the horizontal bars in the processing areas was recognized as being undesirable, from the production viewpoint as well as nuclear safety. These racks will be re-designed to ensure that the tote trays will not fall on other trays. (Reference paragraph 35.)
46. The Radiation Specialist discussed the health physics practices that appeared to be inadequate for proper contamination control. Although the presence of ashtrays around the uranium oxide blending stations, the indiscriminate wearing of protective clothing around office and eating facilities, and indications of high fixed alpha contamination do not necessarily mean that there is overexposure to personnel; the few number of smears and the few number of urinalysis samples leaves doubt as to whether the administrative controls are adequate to detect and prevent undue exposure.

47. The Inspection Specialist (Criticality) stated that a Form AEC-592 would be sent to Sylcor stating the noncompliance items previously discussed in paragraphs 43 and 44. It was pointed out that, although the vault areas are locked and are not easily accessible, management must occasionally inspect these areas to ensure that the procedures for which they are responsible are being followed.

Health Physics Review

Possession and Use of Material

48. Sylcor manufactures various types of fuel elements. Elements are of the flat plate, wafer and tubular types. Enrichments are either 90% or 93%, according to Grieb. Receipt and transfer records since the previous inspection were examined and are summarized in Attachment No. 2. The license possession limit is 850 kg U-235.
49. Records were examined and it was noted that as of June 30, 1965, the licensee possessed 95.315 kg U-235 and total Uranium of 104.59 kg. Receipts and transfers since the previous inspection are noted in Attachment No. 2. Figures were taken from the semi-annual reports prepared and sent to Oak Ridge Operations Office in accordance with 10 CFR 70.51, 70.53 and 70.54.
50. Richard Bangs, Accountability Accountant, stated that of the total material on hand 37.422 kg U-235 is 93% enrichment and 57.892 kg U-235 is 90% enrichment.
51. Grieb said that a few element customers are as follows:
- | | |
|------------------------|---------------|
| Sweden | BNL |
| Pakistan | NASA |
| ATR (Phillips) | APTR (France) |
| GETR | Belgium |
| CEN (France) | Japan |
| University of Missouri | |
52. Elements have been manufactured both under AEC contract and license; however, Grieb stated that all contract work is phasing off. Only the commercial (licensed) division is to remain active at Hicksville. Approximately 100 to 120 persons are employed in the commercial division which at times is on a 3 shift schedule. Elements manufactured are 90% - 93% enrichment. Grieb stated that the 20% enrichment material indicated in the inventory of January 1, 1961, was possessed but never handled.

Personnel Monitoring

53. Film badges are currently provided by Landauer, Inc. Badges are currently changed on a bi-weekly basis. Both high and low sensitivity films are supplied with each badge. The Landauer contract originated in April, 1964. Prior to that film badges were supplied by Nuclear Advisors. Grieb stated that their service was unsatisfactory. Records were examined and it was noted that for the year 1965, the highest exposure was a total of 90 mrem. Average exposures for the first seven months of 1965 were from 10 to 30 mrem. In 1964 it was noted that the highest yearly exposure was 390 mrem, average exposure being approximately 100 mrem in the entire year. It was noted that the highest quarterly exposure dose in 1964 was 150 mrem. For 1963 it was noted that the highest yearly total was 463 mrem, average exposure being 200 mrem. The highest quarterly exposures were noted to be 260, 240 and 230 mrem. Preceding years were noted to be approximately the same as 1963. Both high range and low range elements are provided in Landauer's film badge. Indium foils for all employees are provided with the employee identification badge.

Bioassay

54. No urinalysis program is currently in effect at Sylcor. Grieb stated that at various times in the past when it was suspected that a worker might have been exposed to air particulate contamination, specific urine samples have been collected. He stated that these samples have been taken within 24 hours after suspected uptake. These samples are analyzed for uranium content by Controls for Radiation, Inc. The inspector noted that only six samples have been taken since March, 1961. Sample dates were as follows: 9/13/61, 1/8/63, 1/18/63, 5/7/64, 12/31/64 and 1/22/65. According to records, samples are analyzed radiochemically. Results are given in terms of dpm/l and also in terms of ug/l enriched uranium. Only one sample was noted to be greater than 40 dpm/l. This was a sample taken on 12/31/64 from a worker who, according to Grieb, had been changing filters located in exhaust ducts. The filters had reportedly been sealed in cardboard boxes and were being carried to the chemistry lab for analysis. The worker then dropped the boxes which broke open. It was suspected that the worker could have inhaled some UO_2 . A sample was taken within 24 hours, according to Grieb. It was analyzed as 1230 dpm/l. UO_2 is insoluble. Conrad also converted the counting rate to terms of ug/l enriched uranium. The total was noted to be 7.14 ug/l. The inspector performed an independent rough calculation based on a reported counting rate and information extracted from a report issued by General Electric, Knolls Atomic Power Laboratory. The report is KAPL-667. The enriched uranium content was roughly evaluated at 12.4 ug/l, which agrees fairly well with Conrad's calculation. Further calculations have been made at Region I in an attempt to determine total amounts of uranium deposited in the worker's lung. The method of calculation also appears in KAP-667. Calculations appear as Attachment No. 3 of this report and indicate possibility an approximate of 5.45 mg lung deposition. It is not felt that these results are completely valid because the sample was taken shortly after suspected uptake. Other information extracted from HASL-58 indicates that excretion rate of insoluble uranium is somewhat higher during the first 48 hours following uptake, and does not follow the estimated biological half life of 100 to 120 days. Rough estimates of curves which occur in HASL-58 indicate that over the first 10 to 20 days

uranium is excreted with a biological half life of closer to 10 days. It was not possible to estimate excretion rate for the first two days after uptake. It was noted in various HASL and ORNL reports that the best time to sample for insoluble uranium is at least 48 hours after the uptake. Because no further urine samples were collected from this worker, it is not possible to more accurately determine the amount of uptake.

Surveys

55. Contamination surveys are performed on a weekly basis, according to Grieb. Filter paper smears are taken in various working areas and evaluated for alpha activity. Grieb stated that levels requiring decontamination are as follows: 25 cpm/100 cm² inside working areas, and 5 cpm/100 cm² outside working areas. According to Grieb, samples are evaluated on a Baird Atomic (B/A) gas flow proportional counter, whose efficiency is estimated to be 20%.
56. He stated that the counter is calibrated at least annually by B/A personnel. Records were examined and it was noted that the weekly surveys consist of from 7 to 10 smear samples only. Records were examined and it was noted that average counting rates for smears taken in processing areas range from 10 to 100 counts per minute. Some samples of up to 800 cpm were observed. Grieb prepares a safety letter to Grant LaPier, the plant manager, indicating levels of contamination existing and requesting decontamination. He stated that in general co-operation has been good. It was noted that samples taken in unrestricted areas have ranged from 5 to 20 counts per minute. Grieb stated that he counts each sample for 15 minutes.
57. Grieb stated that breathing zone air samples are taken periodically in restricted areas. They have been taken for each type of job performed. The sample period is reported to be 15 to 30 minutes at a flow rate of 20 l per minute. He stated that operations providing the most probable air particulate problem are the melting, powder blending and weighing operations. He stated that except for the PM-3 tubular element job, powders have not been handled since the previous inspection. He further stated that melting has only been performed once in the past six months. Records were examined and it was noted that various air samples have been taken at a frequency of 3 to 4 times per month, depending on operations. They are reportedly counted in the B/A gas flow proportional counter. Records were examined and it was noted that air samples have ranged from 10⁻¹² to 10⁻¹¹ uc/cc. It was noted that 10 CFR 20 limits for insoluble uranium-235 concentrations based on 40 hour week are 10⁻¹⁰ uc/cc. It was noted that only on one occasion was this concentration exceeded. On May 6, 1964 a concentration of 3.67 x 10⁻¹⁰ uc/cc was noted. Samples taken in the same area on days previous and days following this concentration were all noted to be of the range of 10⁻¹² uc/cc, meaning that the average concentration for any 40 hour period was approximately 2 x 10⁻¹¹ uc/cc. A series of urine samples was collected from all employees in that area on May 7, 1964. As stated in paragraph 54 above, all results were noted to be less than 4 dpm/l.

or 40?

58. Samples of air released to atmosphere via filtered air exhaust ducts are taken approximately quarterly depending on operations. The air sampler is held at the duct outlet with the filter paper "locking" at the airflow. Samples, according to Grieb, are taken only during periods when associated equipment is working. It was noted that the licensee's procedures referenced in License Condition 8 states that air samples are to be taken at least quarterly. These records were examined and it was noted that results have been less than 4×10^{-12} uc/cc, which are the 10 CFR 20 limits for insoluble U-235 listed in Appendix B, Table II, Column 1. On only one occasion was it noted that this limit was exceeded. Three samples taken on October 18, 1963 were evaluated as follows: 1.16×10^{-11} uc/cc, 1.79×10^{-11} uc/cc and 1.46×10^{-11} uc/cc. The samples were taken on the roof of the metal laboratory, the exhaust duct led from the melting furnaces. It was noted that yearly averages have ranged from 1 to 2×10^{-12} uc/cc.
59. Liquid waste is generated from various cleaning and leaching operations. Liquid waste is discharged to one of four sumps. The sumps are discharged to a dry well located on Sylcor property. The sumps discharge continuously, according to Grieb. Samples of the liquid in the sumps are taken monthly and analysed spectrophotometrically. Dischargeable rates, according to 10 CFR 20, are 3×10^{-7} uc/cc. Analyses are performed in the chemistry section. It was noted that samples have averaged approximately 1 to 8×10^{-7} uc/cc. The highest results noted during examination of the records was 8×10^{-6} uc/cc. Grieb was asked whether he considered monthly sampling to be adequate since discharge is continuous. He stated that he thought the sampling procedure was adequate. The inspector pointed out that a continuous sampling method, such as continuous drip sampling, would provide more meaningful results.

Instrumentation

60. The licensee possesses a GM survey meter, a Technical Associates Juno, Eberline Instruments Company PAC 3G. The units are checked or calibrated at least semi-annually by the manufacturers.
61. There are eleven Victoreen area probes distributed through the facility, used as criticality alarms. Grieb stated that these alarms are checked and tested weekly. The read out panel is connected to the alarm system. Alarm points are set at 5 mr/hr. The alarm system consists of 3 horns. In addition to the Victoreen area counters, Sylvania has installed three ORNL threshold detectors in the facility. Two are located in the main process building. The third is located in the melting process area. It was noted that the detectors are not fireproof.
62. The licensee possesses protective clothing, such as coveralls, head covers, gloves, and shoe covers as well as four Scott air packs. These are self-contained breathing air packs. Two of these are kept

in the emergency shed described in the license operating procedures. Each is supplied with a spare cylinder. Sylvania also has the capability of recharging used up cylinders. Counting equipment for evaluation of the threshold detectors is on hand and kept in another building. The counting equipment is not kept running. There are also 15 to 20 spare film badges kept with the emergency equipment.

Training

63. Grieb stated that there have been no new employees at this facility for at least five years. Periodic retraining sessions are held approximately annually. If confusion or problems with operating procedures should arise, safety meetings are held to straighten out the problem. New procedures are written and copies thereof are given to the operators. Nuclear safety discussions are also held periodically, according to Grieb. Form AEC-3 was noted to be posted at entrances of the process areas. It was noted that all entrances to the processing buildings are posted with the standard "Caution - Radioactive Material" sign and symbol. All containers were noted to be labeled with the standard "Caution - Radioactive Material" signs and symbols and contained information as to kind, quantity, and date of assay. Shipping containers were noted to be labeled as per ICC regulations.

Inspector's Survey

64. The inspector conducted a survey of the process area utilizing an Eberline PAC -1SA scintillation alpha detector, serial number 3036, calibrated at HASL on August 2, 1965. The efficiency was reportedly approximately 40%. Also 30 smears were taken in the processing area. All smears were evaluated at HASL and were less than 500 dpm/100 cm². A diagram of the area is included with this report as Attachment No. 4. Instrument readings ranged from 50 cpm to 200,000 cpm. The latter figure was detected on a stool, whose surface was covered with yellow tape. Readings of from 1,000 to 20,000 dpm were obtained in the machine shop, the latter figure being obtained under the milling machine. Various scraps and shavings resulting from machining operations were noted to be lying on the floor. They had been there since prior to plant shut down for vacation two weeks previous to the inspection. It was noted that the milling machine and various lathes and shapers were not provided with shields to protect workers from turnings. They are also not provided with ventilation.
65. Instrument readings at contact with floors, hoods and table tops in the area where powder blending is performed, ranged from 500 to 1500 dpm. It was noted that there were several cigarette butts lying on the floor in this area. It was further noted that in one of the semi-enclosed hoods was an ash tray containing several cigarette butts. Instrument readings were from 700 to 1000 dpm, noted at contact with the floor of this hood. Grieb was asked whether smoking was permitted in this area. He stated that smoking is not permitted in this area and that he would make a greater effort to enforce this regulation. The inspector noted that page 31, paragraph V B.4 of the renewal application dated September, 1964, specifically forbids smoking in process areas.

-13-

66. The smear contamination samples have been evaluated at HASL_2 . Contamination levels have ranged from 3.5 to 214 dpm/100 cm^2 .
67. Grieb was questioned concerning protective clothing worn in process areas. He stated that only lab coats are required in the process areas. Neither shoe covers nor gloves are required. The inspector noted that several of the workers were wearing their lab coats in the lunchroom facility set apart from the process area. There was question as to whether this was the normal procedure. He stated that such practice is not allowed. It was further noted that two of the workers walked into the office areas wearing their lab coats.

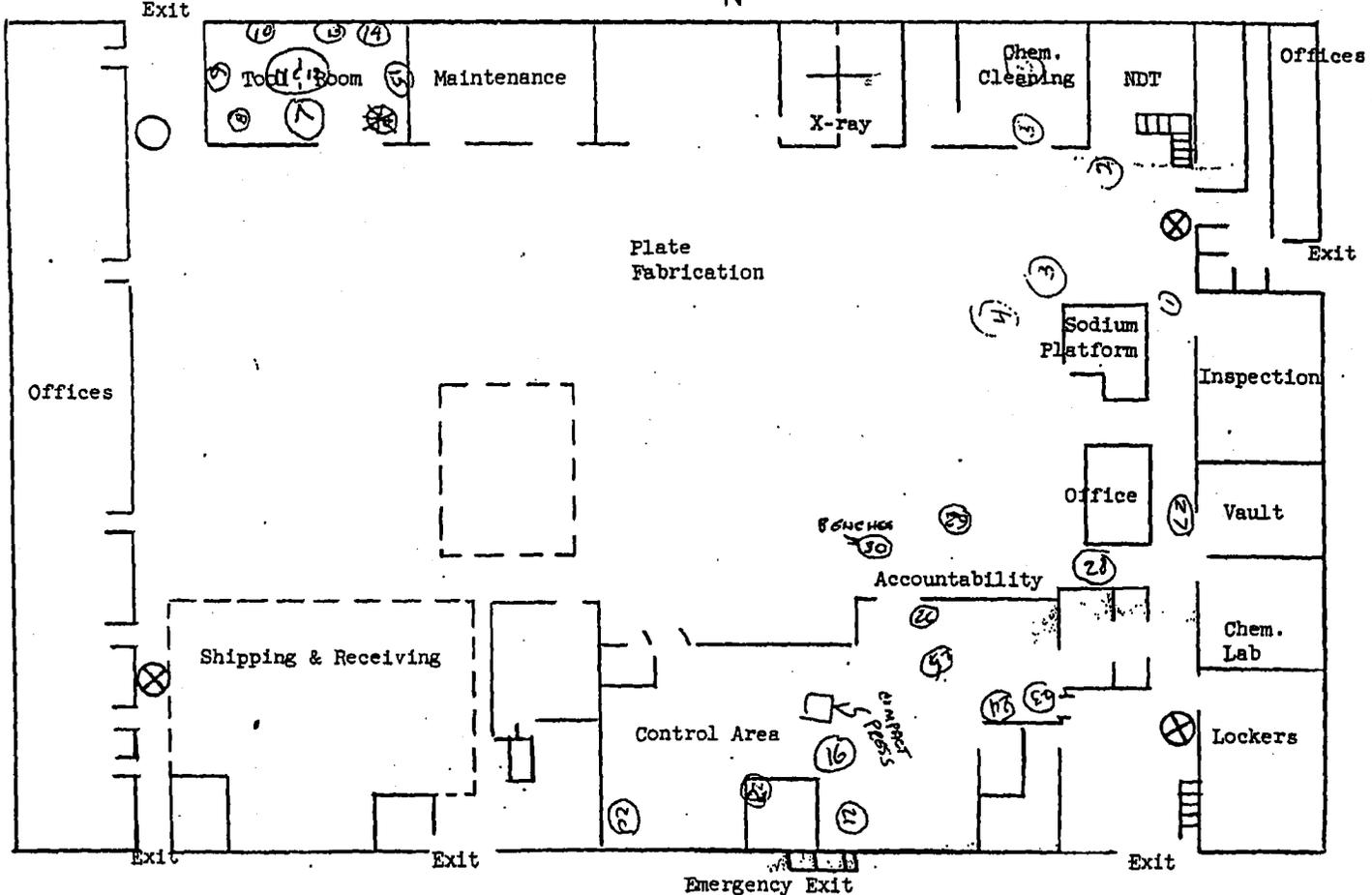
FLOOR PLAN - BUILDING NO. 4

~~XXXXXXXXXX~~



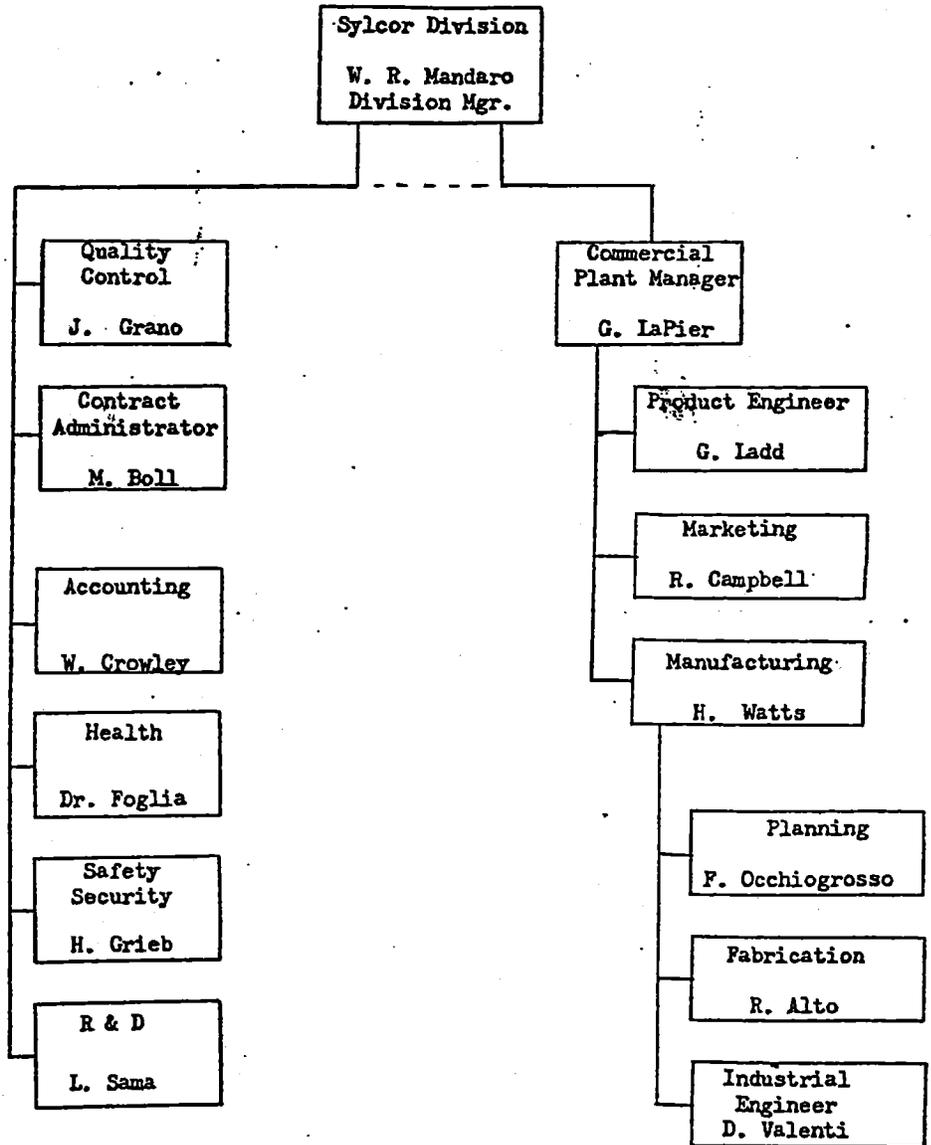
LEGEND

⊗ Fire Alarm Stations



Attachment #4

GENERAL TELEPHONE AND ELECTRONICS CORPORATION
Sylvania Electric Products, Inc.



ATTACHMENT NO. 2

January 1 - June 30, 1961

	<u>Total Uranium</u>	<u>U-235</u>
On hand	1,234,691 kg	379.473 kg (20% enriched)
Received	74.814 kg	67.548 kg
Shipped	462.74 kg	165.130 kg
On hand	864.812 kg	281.052 kg

June 30 - December 31, 1961

	<u>Total Uranium</u>	<u>U-235</u>
On hand	864.812 kg	281.052 kg
Received	86.644 kg	78.093 kg
Shipped	768.396 kg	215.050 kg
On hand	165.054 kg	144.090 kg

January 1 - June 30, 1962

	<u>Total Uranium</u>	<u>U-235</u>
On hand	165.054 kg	144.090 kg
Received	342.854 kg	142.053 kg
Shipped	66.196 kg	61.316 kg
On hand	431.822 kg	222.973 kg

June 30 - December 31, 1962

	<u>Total Uranium</u>	<u>U-235</u>
On hand	431.822 kg	222.973 kg

ATTACHMENT NO. 2
(Cont'd.)

June 30 - December 31, 1962
(Cont'd.)

	<u>Total Uranium</u>	<u>U-235</u>
Received	127.648 kg	115.916 kg
Shipped	105.988 kg	97.251 kg
On hand	452.817 kg	204.876 kg

January 1 - June 30, 1963

	<u>Total Uranium</u>	<u>U-235</u>
On hand	452.817 kg	240.876 kg
Received	112.767 kg	103.506 kg
Shipped	79.312 kg	71.946 kg
On hand	486.406 kg	272.514 kg

June 30 - December 31, 1963

	<u>Total Uranium</u>	<u>U-235</u>
On hand	486.406 kg	272.514 kg
Received	308.117 kg	279.652 kg
Shipped	160.925 kg	146.261 kg
On hand	626.411 kg	399.642 kg

January 1 - June 30, 1964

	<u>Total Uranium</u>	<u>U-235</u>
On hand	626.411 kg	399.642 kg
Received	126.983 kg	115.383 kg

ATTACHMENT NO. 2
(Cont'd.)

January 1 - June 30, 1964
(Cont'd.)

	<u>Total Uranium</u>	<u>U-235</u>
Shipped	305.465 kg	276.828 kg
On hand	447.298 kg	237.611 kg

June 30 - December 31, 1964

	<u>Total Uranium</u>	<u>U-235</u>
On hand	447.298 kg	237.611 kg
Received	71.364 kg	65.553 kg
Shipped	97.221 kg	88.489 kg
On hand	417.816 kg	210.836 kg

January 1 - June 30, 1965

	<u>Total Uranium</u>	<u>U-235</u>
On hand	417.816 kg	210.836 kg
Received	30.493 kg	27.409 kg
Shipped	339.516 kg	138.983 kg
On hand	104.590 kg	95.315 kg

ATTACHMENT NO. 3

Section 54

- A. A urine sample was evaluated by Controls for Radiation, Inc. on 12/31/64. The counting rate was 1230 dpm/l. ConRad reported this was equal to 7.14 ug/l enriched uranium in the sample.

A rough calculation and discussion of the meaningfulness of the result follows. The method of calculation and discussion thereof appear in KAPL Report 667 and HASL Report 58.

Assumptions

1. Approximately 98% of the sample count rate is due to presence of U-234.
2. U-234 comprises 1.1% of the total enriched uranium content of the urine samples.
3. The enriched uranium is in insoluble form, since, according to Grieb, the only powders used in the plant are uranium oxide and uranium carbide.
4. Insoluble uranium has a biological half life of 100 - 120 days and is eliminated from the lung at a rate of approximately .7% per day.
5. One half of the uranium deposited in the lung is eliminated mechanically. (coughed up, removed by ciliary action, etc.) The other half is absorbed.
6. Two-thirds of the absorbed material is eliminated via the urinary system.
7. A residual lung burden of .017 uc U-234 will give a dose of 300 mrem/week to the lungs. (HASL-58 and KAPL-667 agree except that KAPL, using an RBE of 20 rather than 10 for the alpha emitter estimated a burden of .008 uc.)

B. Urinalysis Result = 1230 dpm/l

Assuming this to be Approximately 100% U-234

$$1. \frac{1230 \text{ dpm/l}}{2.22 \times 10^6 \text{ dpm/uc}} = 5.55 \times 10^{-4} \frac{\text{uc}}{1} \text{ U-234}$$

ATTACHMENT NO. 3
(Cont'd.)

$1.0 \text{ ng U-235} = 100 \text{ ng U} = 0.044 \text{ ng U-235}$
Person excretes 1500 ml/day of urine therefore
 $0.044 \times 1500 = 66 \text{ ng U-235 per 24 hours}$

$1.2 = 12.9 \text{ ng enriched U per 24 hour sample}$

(Concns reported 7.14 ug/l or 10.7 sig/l 5.1 enriched U)

The sample was submitted within 24 hours of uptake, but is
considered to be insoluble therefore, elimination rate
is 15%/day

$12.9 = 2022 \text{ ug in lung if all material ingested were}$
 $.007$ absorbed by body.

- 6. Only 50% of insoluble uranium in lung is absorbed, there-
fore, total amount in lung would be:

$2022 \times 2 = 4050 \text{ ug}$

- 7. Only two-thirds of the absorbed uranium is excreted in
urine, therefore, $4050 \times \frac{3}{2} = 6075 \text{ ug}$ or 6.07 mg might
be total enriched U lung ² deposition, provided that a
large fraction of material is not excreted immediately
after uptake.

C. Dose

If .017 uc (or 73 dpm) U-234 in lung gives a dose of 300
24 hr.
sample

mrem/week, then

$\frac{1230}{73} = 17 \times 300 \text{ mrem} = 5100 \text{ mrem}$ or 5.1 rem/week to lungs

Form No. 29 - Printed and Sold by Univ. & Co., Inc., 24 Beaufort St., New York 4, N. Y. - U 3578

Form 7525-V (Rev. July 1952)

(See Instructions on Reverse Side)

U. S. DEPARTMENT OF COMMERCE BUREAU OF INTERNATIONAL COMMERCE SHIPPER'S EXPORT DECLARATION

OF SHIPMENTS FROM THE UNITED STATES

Export Shipments Are Subject To U. S. Customs Inspection

READ CAREFULLY THE INSTRUCTIONS ON BACK TO AVOID DELAY AT SHIPPING POINT... For Shipments From Overseas, the Import Declaration must be presented to and authenticated by the Collector of Customs...

Do Not Use This Area District: Port: Country: (For customs use only)

CONFIDENTIAL For Official Purpose authorized by the Secretary of Commerce. Use for unauthorized purposes is not permitted.

Customs Authentication (For Customs Use Only) 70-9

1. FROM (U. S. Port of Export) New York, New York 2. METHOD OF TRANSPORTATION (check one) 2a. EXPORTING CARRIER (If vessel, give name of ship, flag and pier number. If air, give name of airline.) Pan American World Airways, Kennedy Field Airport, Jamaica NY 11430

7. FOREIGN PORT OF UNLOADING (For vessel and air shipments only) Stockholm, Sweden 8. PLACE AND COUNTRY OF ULTIMATE DESTINATION (Not place of transshipment.)

Table with 6 columns: (9) MARKS AND NOS., (10) NUMBER AND KIND OF PACKAGES, (11) SHIPPING (Gross) WEIGHT IN POUNDS, (12) U. S. SCHEDULE B COMMODITY No., (13) SCHEDULE B COMMODITY No., (14) NET QUANTITY IN SCHEDULE B UNITS, (15) VALUE AT U. S. PORT. Includes entry for 'Four metal drums containing 16 finished Polonium-210 capsules'.

16. WAYBILL OR MANIFEST NO. (of Exporting Carrier) 17. DATE OF EXPORTATION (No. required for shipments by vessel)

18. THE UNDERSIGNED HEREBY AUTHORIZES SYLVANIA DIVISION, SYLVANIA ELECTRIC PRODUCTS, INC. TO ACT AS FORWARDING AGENT FOR EXPORT CONTROL AND CUSTOMS PURPOSES.

19. I CERTIFY THAT ALL STATEMENTS MADE AND ALL INFORMATION CONTAINED IN THIS EXPORT DECLARATION ARE TRUE AND CORRECT. I AM AWARE OF THE PENALTIES PROVIDED FOR FALSE REPRESENTATION.

Signature: R. A. Alto, Supervisor Production Control, S. E. Box 25, Richville, New York 11802

Declaration should be made by duly authorized officer or employee of exporter or of forwarding agent named by exporter. *If shipping weight is not available for each Schedule B item listed in column (13) included in one or more packages, insert the approximate gross weight for each Schedule B item.

INSTRUCTIONS FOR THE USE OF THE YELLOW SHIPPER'S EXPORT DECLARATION

(Commerce Form 7525-V)

(Follow Carefully to Avoid Delay at Shipping Point)

I. PROVISIONS OF LAW AND REGULATIONS.

(a) Vessels shall not be cleared for foreign ports until export declarations covering the cargo, in its parts have been delivered to the collector at the point of exportation by the owner, shipper, or consignee thereof. Similar provisions apply to exportations by rail, air, vehicle, or ferry.

(b) A declaration presented to a Collector of Customs or Postmaster and used to effect an exportation of any commodity for which a validated export license or a general license is required, constitutes a representation by the exporter (1) that all statements made and information set forth in the declaration have been furnished by him or on his behalf for the purpose of effecting an exportation in accordance with the export control regulations; (2) that the exportation of the commodity described in the declaration is authorized under the general or validated export license identified in the declaration; (3) that the statements contained in the declaration are identical in all respects with the contents of the validated export license, or the terms, provisions and conditions of the applicable general license; and (4) that all other terms, provisions, and conditions of the export control regulations applicable to the exportation have been met.

(c) It is unlawful under the export regulations and the export control law, in addition to the provisions of any other law, for any person, whether or not situated in the United States, knowingly to make any false or misleading representation, statement, or certification, or to falsify or conceal any material fact, whether directly to the Bureau of International Commerce, the Bureau of the Census, any collector of customs, or an official of any other United States agency, or indirectly through any other person or foreign government agency or official, for the purpose of or in connection with effecting an exportation from the United States, or the transportation, transshipment, or distribution of any such exportation, or the issuance or maintenance in effect of any document relating to export control, or in the course of an investigation or other action instituted under the authority of the Export Control Act of 1949, as amended. Any person violating the provisions of law and/or the Export Control Regulations referred to herein is subject to a fine of not more than \$10,000 or imprisonment for not more than 5 years, or both (Act of June 25, 1948, c. 446, 62 Stat. 748; 18 U. S. C. Sec. 1001); and/or to a fine of up to five times the value of the exports involved or \$20,000, whichever is greater, or imprisonment for not more than 5 years, or both (Export Control Act of 1949, as amended, Sec. 5, 63 Stat. 6, 50 U.S.C. App. Sec. 2025).

(d) Commodities which are intended to be, or are being, or have been exported in violation of the export control law and the regulations promulgated thereunder, are subject to seizure, detention, condemnation and sale under the Act of June 15, 1917, Ch. 30, Title VI, Sec. 1, 40 Stat. 223; 22 U.S.C. Sec. 401, as amended.

(e) It is a criminal offense for any person to knowingly make to the Bureau of the Census or the Bureau of International Commerce any false or misleading statement or representation relating to information on the Shipper's Export Declaration, subject to a maximum penalty of \$10,000 fine or imprisonment for 5 years, or both (18 U.S.C. Sec. 1001).

(f) Shipper's export declarations must also be filed for shipments between the United States and its outlying areas.

(g) For instructions regarding the use of this form for parcel-post exportations, see current United States Postal Manual, Chapter 2. One copy of the declaration should be mailed by postmaster to Foreign Trade Branch, Economic Operations Division, Bureau of the Census, 434 Customhouse, New York 4, N. Y.

II. SHIPPER'S EXPORT DECLARATIONS (Commerce Form 7525-V).

(a) Must be made in triplicate for shipments by vessel, air, rail, car, vehicle, and ferry for all merchandise shipped to foreign countries, including Canada, where that country is not the final destination. For shipments finally destined to Canada, and between the United States and its outlying areas, the declarations must be made in duplicate. Under export control regulations, additional copies may be required by the Bureau of International Commerce. (Commerce Form 7525-V should not be filed for merchandise shipped in-transit through the United States from one foreign country to another. In lieu thereof, "Shipper's Export Declaration for In-transit Goods" on Commerce Form 7518 should be filed.)

(b) The exporter or his forwarding agent (duly authorized by specific power of attorney on file in the Customhouse or by specific power of attorney in item 18 of the export declaration form) or a duly authorized officer or employee, or other must sign the original copy of the declaration in the space provided for signature. The name of the corporation or firm and the capacity of the signer (secretary, treasurer, manager, etc.) must be set out in the line captioned "Firm" in item 18. Data is not required on this declaration, but the provisions of law and export control regulations apply to false representations, as indicated in paragraph I (c) and (d), above, are fully applicable.

(c) Designation of agent must be in writing and signed by the exporter on Declaration Form or in separate document providing similar authorization, which shall be filed with the collector. Export control regulations define a "forwarding agent" as a person authorized by a named exporter to perform for the exporter actual services which facilitate exportation of the commodities described in the declaration, such as preparing the declaration, attending to clearance of the shipment by submission of documents to the Collector of Customs or export control officers, securing cargo space or delivering the commodities to the exporting carrier, obtaining bills of lading in connection with the exportation, and attending to the formalities of consular invoices, certificates of origin, and other like documents; but such person need not be regularly engaged in the freight forwarding business.

(d) An authenticated declaration evidences the existence of a validated export license or an exportation permitted by an applicable general license. It is a violation of the export control law and regulations for any person to receive, use, alter, or assist in or permit the use or alteration of, any export declaration which has been authenticated by a Collector of Customs in connection with the exportation of any commodity under a general or validated export license, for the purpose of facilitating or effecting any exportation other than that set forth in such declaration and in accordance with the terms, provisions, and conditions thereof. Any person receiving an authenticated declaration showing evidence of unauthorized change, alteration, or amendment may not take any action to facilitate the exportation, but must report the facts to the nearest Collector of Customs and surrender the declaration to such Collector.

(e) In the case of exportations subject to the export control law and regulations, the original and two copies (or additional copies if required or authorized by export control regulations) of the declaration submitted to the Collector of Customs at the port of exit by the exporter, his named duly authorized forwarding agent (or a duly authorized officer or employee of either) will be authenticated by the Collector. The Collector will retain the original and one copy, and will return one (or more where required or authorized) authenticated copy to the exporter or such agent. One copy so returned shall be delivered by the exporter, or his agent, to the exporting carrier for attachment to the outward manifest. The additional copy or copies, when required or authorized, shall be used by the exporter in conformity with export control regulations. All copies not used shall be returned to the Collector. The statistical (manifest) copy of the declaration will be forwarded by the Collector to the Bureau of the Census. Collectors will not authenticate a declaration which has been altered, changed, or amended, except as and to the extent authorized by the export control regulations.

(f) For shipments by rail to Mexico and Canada separate declarations shall be prepared for each railway.

(g) Shipper's Export Declaration Form may be used only for official purposes, and only by the Secretary of Commerce. It is not authorized for use for official purposes by any other person, and the provisions of this Export Control Act (Title 50, U.S.C.) and the regulations thereunder from the export declaration will be published or disclosed only when the Secretary has determined that the withholding thereof is contrary to the national interest.

III. EXPLANATION OF TERMS.

Item 1. *United States Port of Export*.—Insert United States Customs port of exportation in terms of Schedule D, "Code Classification of Customs Districts."

Item 2. *Method of Transportation*.—Check whether exported by vessel (including ferry), air, or other means of transportation: If "Other," specify: i.e., rail, truck, etc.

Item 2a. *Exporting Carrier*.—In addition to checking the method of transportation in item 2, specify here the name of the exporting carrier. If vessel, give name of ship and number or name of pier at which the goods were loaded. If air, give name of airline. If "Other" (rail, vehicle, etc.), give name of carrier and identification by number or other designation.

Item 3. *Exporter*.—Exporter named shall be licensee named in the validated export license or person entitled to make the exportation under applicable general license, in conformity with export control regulations.

Item 4. *Agent of Exporter*.—State name of duly authorized forwarding agent of named exporter. See paragraph 11 (b).

Item 5. *Ultimate Consignee*.—Ultimate consignee (whether by sale in U. S. or abroad or by consignment) shall be person named in ultimate consignee in validated export license or authorized to be ultimate consignee under applicable general license in conformity with export control regulations.

Item 6. *Intermediate Consignee*.—Intermediate consignee shall be person named as such in validated export license or authorized to be such in validated export license in conformity with export control regulations. If none, space should be inserted if known at time of exportation.

Item 7. *Foreign Port of Unloading*.—Foreign port of unloading (including U. S. outlying areas) which the merchandise will be unladen from the exporting carrier specified in item 2, should be shown for vessel and air shipments only.

Item 8. *Place and Country of Ultimate Destination*.—The final place and country of destination, not the place of transshipment, should be shown in the space captioned "Place and Country of Ultimate Destination." Special care should be taken to give the final place and country of destination for goods shipped through Canada, United Kingdom, Canal Zone, Chile, Peru, or other seaboard countries for transshipment by other countries, such as through Chile or Peru, destined for Bolivia.

IV. DESCRIPTION OF ARTICLES, QUANTITIES, AND VALUES.

Column 9.—Insert marks and numbers.

Column 10.—Insert number and kinds of packages, description of commodities, export license number, and expiration date, or general license symbol. Commodities must be described by nature and quantity in sufficient detail to permit verification of the Schedule B commodity number assigned. The description of the articles must be definite and complete, preferably the common commercial name of the specific article, and must conform with that set forth in the validated export license or with the requirements of the applicable general license. General terms such as "dry goods," "groceries," "meats," etc., are not sufficient. Catalog number or other characteristic trade identification should be used where they will aid such description. Identification or description by trade mark or brand name should be provided where possible.

Column 11.—Insert gross weight in pounds for vessel and air shipments only.

Column 12.—Specify whether of domestic or foreign origin. Exports of domestic merchandise include commodities which are the growth, produce, or manufacture of the United States. Exports of foreign merchandise include commodities of foreign origin which entered the United States as imports, and which, at the time of exportation, are in the same condition as when imported. Commodities of foreign origin which have been changed in the United States from the form in which they were imported, or which have been manufactured in the United States, are considered as "domestic" commodities. The above definition of domestic and foreign merchandise is intended only for use in reporting column 12 of this form, and is not intended for statistical purposes other than those stated.

Column 13.—Insert Schedule B commodity code number. (See Instruction VII (c) below.)

Column 14.—Insert the net quantity in Schedule B units and state the unit of quantity shown: i.e., pounds, square yards, etc.

Column 15.—Insert the dollar value at time and place (U. S. port) of export (cost plus freight). Value stated should be the selling price, or cost if not sold, including inland freight, insurance, and other charges to border point, seaport, or exporting airport. Ocean freight, marine insurance, and other charges incurred beyond the U. S. port of exportation should be excluded.

Item 16.—For convenience of exporter, to be inserted if desired.

Item 17.—To be inserted by Collector of Customs.

V. SIGNATURES.

Items 18 and 19.—See paragraphs II (b) and II (c) of these instructions.

VI. FOREIGN COMMERCE STATISTICAL REGULATIONS—EXPORT CONTROL REGULATIONS.

For more detailed information regarding the preparation of the export declaration, refer to the Regulations for Collection of Statistics of Foreign Commerce and Navigation of the United States (Title 18, Ch. I, Part 30, Code of Federal Regulations), copies of which may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Information concerning export control law and regulations may be obtained from the Bureau of International Commerce, Washington 25, D. C., or from the Department of Commerce Field Offices.

VII. SCHEDULE B AND BLANKS.

(a) Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States, may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.; local Collectors of Customs; and the Department of Commerce Field Offices.

(b) Shipper's Export Declaration blanks may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.; local Collectors of Customs; and Department of Commerce Field Offices located in principal cities. They may be printed by private parties provided they conform to the official form in size, weight, color, and quality (weight) of paper stock, and arrangement. An authenticated Shipper's Export Declaration may not be reproduced in any form.

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Printed and Sold by UNZ & CO., Inc., 24 Beaver Street, New York 4, N. Y.

SYL COR

SYLVANIA-CORNING
NUCLEAR CORP.



BAYSIDE, NEW YORK

TELEPHONE
FACULTY 1-1212

File by

March 2, 1959

U.S. Atomic Energy Commission
Division of Licensing & Regulation
Washington 25, D. C.

Att: Mr. Lyall Johnson

Gentlemen:

We hereby request an allocation of four (4.0) kilograms of U-235 contained in highly enriched uranium in the metallic form.

This material will be used for the fabrication of fuel elements containing special nuclear material for transfer to North Carolina State College under the educational assistance program. These elements will be supplied on a contract between Nucleodyne Division of Cook Electric Company and Sylcor.

Please note that we specify this allocation in the form of metal in accordance with our agreement with Nucleodyne.

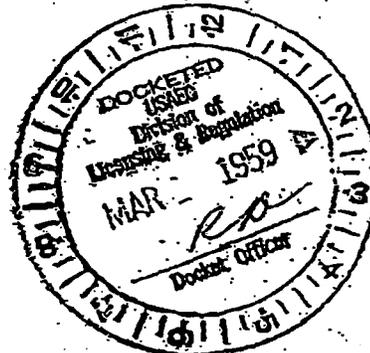
Very truly yours,

SYLVANIA-CORNING NUCLEAR CORP.

Garth W. Edwards
Garth W. Edwards
Treasurer

GWE:MCC:RM

cc: Dr. Menius
Head, Physics Dept.
North Carolina State College
Raleigh, N. C.



3/2/59

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UNITED STATES ATOMIC ENERGY COMMISSION

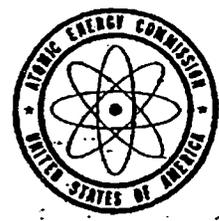
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Twenty-fifth Semiannual Report

OF THE

ATOMIC ENERGY
COMMISSION



January 1959

REPOSITORY REFCO/IC
COLLECTION AEC BOOKS
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FOLDER SEMI ANNUAL REPORTS
1959

5005241 UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C.

LETTER OF SUBMITTAL

WASHINGTON, D. C.,

31 January 1959.

SIRS: We have the honor to submit herewith the Twenty-fifth
Semiannual Report of the United States Atomic Energy Commission,
as required by the Atomic Energy Act of 1954.

Respectfully,

UNITED STATES ATOMIC ENERGY COMMISSION,

JOHN F. FLOBERG.

JOHN S. GRAHAM.

WILLARD F. LIBBY.

HAROLD S. VANCE.

JOHN A. McCONE, *Chairman.*

The Honorable

The President of the Senate.

The Honorable

The Speaker of the House of Representatives.

III

5005242

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offices' performance. Similar reviews were carried out on field staff procedures for assessing contractor performance.

Where feasible inspection programs were revised to reduce the number and frequency of field inspection trips.

Military Reactor Development

Two full-scale propulsion reactors, and seven military reactor prototypes went critical during the past 6-month reporting period, and two new projects were undertaken for reactor development. Twelve new nuclear powered naval ships were authorized.

In the Army Reactors Program, one reactor went into operation and was dedicated in December. A contractor was being selected to design and develop an improved nuclear powerplant designed in modular sections which can be air-transported to a remote site and quickly assembled.

In the Aircraft Reactors Program, work continued to develop nuclear propulsion systems for aircraft, rockets, and ramjets. Testing of instrumentation started on the initial nonflyable test device for nuclear rocket propulsion.

In the Naval Reactors Program, the nuclear-powered submarine, USS *Nautilus* performed two history-making feats—a west-to-east crossing under ice across the Arctic Ocean, passing the North Pole and a submerged speed-record run across the Atlantic. The *Seawolf* established an under-water cruising record for submarines, and the *Skate* crossed the Arctic Ocean from east-to-west, passing the pole. Eleven nuclear-powered submarines and a nuclear-powered guided missile destroyer were added to the growing nuclear fleet. Two new nuclear submarines completed sea trials and two others were launched (see Table I for complete list).

ARMY REACTORS PROGRAM

Army Package Power Reactors

At the end of 1958 the *Army Package Power Reactor (APPR-1)*, at Fort Belvoir, Va., had completed more than 18 months of successful operation.

Reliability of operation and ease of control were demonstrated. Firm cost information, operating parameters, and engineering test obtained will be used in adapting the system to remote locations and in improving operating characteristics. The plant continues to serve as a training facility.

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To date the plant has generated 16,435,000 megawatt years of energy. The contract funded in study and evaluation of any radioactive system resulting in performance; (d) nuclear power of primary and secondary

High-power APPR-1 type. A contract funded in study and evaluation of any radioactive system resulting in performance; (d) nuclear power of primary and secondary

Modular prepackaged response to an incident and the Air Force installation, and the project is scheduled for completion in 1960.

The plant will be air-transported to a remote site and quickly assembled. It would be possible to transport the plant to a remote site and quickly assembled.

A pressurized water reactor, the model is a wide range of power requirements. It will be developed in a wide range of power requirements. It will be developed in a wide range of power requirements.

Argonne Low Power

The ALPR, a lower power than the National Reactor Test Facility, was dedicated December 19, 1958.

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To date the plant has operated for 8,600 full power hours or 9.84 megawatt years of its expected 13 megawatt-year core life and has generated 16,435,000 kilowatt-hours of electrical power.

Alco Products, Inc., operating the plant under a Commission contract funded in part by the Department of the Army, continued to study and evaluate operating characteristics, including (a) buildup of any radioactive corrosion products on surfaces in the primary system resulting from use of stainless steel; (b) levels of fission product activity in the reactor coolant; (c) improvement of component performance; (d) nuclear characteristics of the core, and (e) effectiveness of primary and secondary shielding of the plant.

High-power APPR. The Commission entered into a contract with Alco Products to design and develop a higher power core of the APPR-1 type. Alco is developing under Army contract an improved APPR type of reactor to utilize this core.

Modular prepackaged powerplant. Nine proposals were received in response to an invitation extended to industry by the Commission and the Air Force in October for the design, development, fabrication, installation, and test operation of a modular nuclear powerplant. The project is scheduled for completion in approximately 30 months.

The plant would consist of factory-assembled modules or units which can be air-transported to a remote site and rapidly connected. It would be possible also to disassemble the modules and relocate the plant. The plant is to be erected and tested at the Air Force Aircraft Control and Warning Station, Sundance, Wyo.

A pressurized light water reactor, fueled with enriched metallic uranium, the modular plant will have a thermal rating of approximately 8 to 10 megawatts, will provide 1000 electrical kilowatts and 7 million B. t. u. of space heat per hour (200 tkw), and be able to function in a wide range of environmental conditions. Emphasis will be placed on a plant requiring a minimum of attention for operation and maintenance. It will draw extensively on existing technology, but further development will be required to approach an optimum military system.

Argonne Low Power Reactor (ALPR)

The ALPR, a package boiling water reactor of smaller size and lower power than the APPR-1, achieved criticality on August 11 at the National Reactor Testing Station, Idaho, and was formally dedicated December 2. A 500-hour operating test was initiated November 19.

This prototype plant was developed to meet a Department of Defense requirement for a plant to supply about 200 kilowatts of electricity and 400 kilowatts of space heat as the main power source of small, remote installations, such as DEW-Line stations. All components are transportable by air.

Gas-Cooled Reactor Systems

Fabrication of the nonnuclear portion of the *Gas-Cooled Reactor Experiment (GCRE)* by Farnsworth & Chambers Co., Inc., at the National Reactor Testing Station was approximately 45 percent complete as of December 31. The GCRE will develop engineering data and provide experience for mobile powerplants for military use and small stationary powerplants for civilian use.

Aerogel-General Corp. (AGC), contractor for the design, fabrication, and operation of the experiment, completed a detailed analysis of a production-run fuel element and will assemble fuel elements from plates furnished by M&C Nuclear, Inc. AGC also began preliminary design of a mobile plant able to operate under extreme environmental conditions, and transportable intact by trailer or cargo aircraft. Construction is scheduled to start in January 1960.

Advanced Reactor Systems

Final reports were received on three contract studies on compact reactors. The three study contractors—Curtiss-Wright Corp., General Electric Co., and the Nuclear Development Corp. of America—investigated various nuclear reactor concepts for a mobile military powerplant with a power rating up to 3 megawatts, extreme compactness, and low operating weight.

An extension of 4 months was granted Consolidated Vultee Aircraft Corp. (Convair) to continue a study of lightweight reactor shielding and establish detailed requirements for an experimental program to develop compact shielding.

NAVAL REACTORS PROGRAM

Congressional authorization of 11 nuclear submarines and a nuclear guided missile destroyer in fiscal year 1959, increased to 36—33 submarines and 3 surface ships—the number of nuclear-powered ships authorized for the Navy. (Table I summarizes the types and status of the 36 nuclear ships.)

TABLE

SUBMARINES	
SSN(N)571 Nautilus	A
SSN(N)573 Seawolf	S
SSN(N)575 Skate	S
SSN(N)577 Swordfish	S
SSN(N)583 Sargo	S
SSN(N)584 Scadron	R
SSO(N)587 Halibut	R
SSN(N)588 Skipjack	F
SSN(N)589 Scamp	F
SSN(N)590 Scorpion	F
SSN(N)591 Shark	F
SSN(N)592 Snook	F
SSN(N)593 Thresher	F
SSN(N)594 Permit	F
SSN(N)595 Pollack	F
SSN(N)596 Pomfret	F
SSN(N)597	F
SSN(N)598 Triton	E
SSN(N)599 Tullibee	E
SSB(N)600 George Washington	P
SSB(N)601 Patrick Henry	P
SSB(N)602 Theodore Roosevelt	P
SSB(N)603 Robert E. Lee	P
SSB(N)604 Abraham Lincoln	P
SSB(N)605	P
SSB(N)606	P
SSB(N)607	P
SSB(N)608	P
SSB(N)609	P
SSB(N)610	P
SSB(N)611	P
SSB(N)612 Long Beach	P
CVA(N)615 Enterprise	P
DLG(N)	P

* EB Div—Electric Boat; Naval Shipyard, Portsmouth; Ingalls Shipbuilding Corp. Deck Co., Newport News

Submarine Reactors

During the July the *Sargo* constr the *Swordfish*, cc satisfactory con marine, the *Sea*. The first submar *The Submarine*

* Naval reactor projects for submarine, D for destr plant by ship type and by reactor responsible for destruction Engineering, etc.

TABLE I. NUCLEAR POWERED NAVAL SHIPS

SUBMARINES	TYPE	STATUS	SHIPBUILDER *	REACTOR DESIGNER
SSN(N)571 Nautilus	Attack	Operating	EB Division	Westinghouse.
SSN(N)572 Seawolf	do	do	do	General Electric.
SSN(N)573 Skate	Small Attack	do	do	Westinghouse.
SSN(N)574 Swordfish	do	do	Portsmouth	Do.
SSN(N)575 Sargo	do	do	Mare Island	Do.
SSN(N)576 Seadragon	do	Launched (8/16/58)	Portsmouth	Do.
SSN(N)577 Halibut	Regulus Missile	Under construction.	Mare Island	Do.
SSN(N)578 Skipjack	Fast Attack	Launched (5/26/58)	EB Division	Do.
SSN(N)579 Scamp	do	Under construction.	Mare Island	Do.
SSN(N)580 Scorpion	do	do	EB Division	Do.
SSN(N)581 Sculpin	do	do	Ingalls	Do.
SSN(N)582 Shark	do	do	Newport News	Do.
SSN(N)583 Snook	do	do	Ingalls	Do.
SSN(N)584 Thresher	do	do	Portsmouth	Do.
SSN(N)585	do	Authorized	Unassigned	Do.
SSN(N)586	do	do	do	Do.
SSN(N)587	do	do	do	Do.
SSN(N)588	do	Under construction.	Portsmouth	Do.
SSG(N)589 Permit	Regulus Missile	do	Mare Island	Do.
SSG(N)590 Pollack	do	Authorized	Unassigned	Do.
SSG(N)591 Plunger	do	do	do	Do.
SSG(N)592 Triton	Radar Picket	Launched (8/19/58)	EB Division	General Electric.
SSG(N)593 Triton	Hunter Killer	Under construction.	do	Combustion Engineering.
SSG(N)594 Triton	Polaris Missile	do	do	Westinghouse.
SSB(N)595 George Washington	do	do	do	Do.
SSB(N)596 Patrick Henry	do	do	do	Do.
SSB(N)597 Theodore Roosevelt	do	do	Mare Island	Do.
SSB(N)598 Robert E. Lee	do	do	Newport News	Do.
SSB(N)599 Abraham Lincoln	do	do	Portsmouth	Do.
SSB(N)600	do	Authorized	Unassigned	Do.
SSB(N)601	do	do	do	Do.
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SSB(N)820	do	do	do	Do.
SSB(N)821	do			

News (Va.) Shipbuilding and Dry Dock Co. The *Long Beach* will have two A1W nuclear powerplants, the *Enterprise* eight.

Design and development of a pressurized water nuclear propulsion plant for installation in a *destroyer* type of ship continued at the Commission's Knolls Atomic Power Laboratory. A land prototype of this plant (D1G) is being constructed at West Milton, N. Y.

A contract for construction of a *Guided Missile Destroyer (DLG(N))*, which will utilize two D1G type nuclear propulsion plants, was awarded to Bethlehem Steel Co.

AIRCRAFT REACTORS PROGRAM

Nuclear Propulsion for Manned Aircraft

In the *manned aircraft propulsion program* of the joint Aircraft Nuclear Propulsion Program of the Atomic Energy Commission and the Department of Defense, investigations were continued on two basic systems, the *direct-cycle* and the *indirect-cycle*. General Electric Co., Evendale, Ohio, is under contract to the Commission to develop reactors for the *direct-cycle system*.

At the National Reactor Testing Station, Idaho, the core test facility (see photograph) was being used to experiment with a second reactor core in which materials with higher performance capabilities are used.

Construction was essentially completed on research and development facilities at the Connecticut Aircraft Nuclear Engine Laboratory (CANEL) of Pratt & Whitney Aircraft Division of United Aircraft Corp. Under Commission contract, Pratt and Whitney will perform research and development leading to *indirect-cycle* reactors for aircraft propulsion. In this system, the compressed air is heated as it passes through a heat exchanger system containing liquid-metal coolant from the reactor.

The design of a Shield Test Air Facility was started in June for construction at the National Reactor Testing Station. Completion is scheduled for June 1960.

The Oak Ridge National Laboratory provides general support for both the direct and indirect-cycle programs, with particular emphasis on shielding problems.

The Aircraft Nuclear Propulsion research and development effort has successfully passed many important technical milestones. They include the operation of turbojet engines in parallel from a common heat source; the completion of 47 flights of a one-megawatt reactor in a nuclear test airplane outfitted with a complete crew shield (the



U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY RESEARCH AND DEVELOPMENT
WASHINGTON, D.C. 20545

**PROCEDURE FOR THE PREPARATION OF U-235
SOLUTIONS**

1. The material will be received in one bottle.

2. The material will be weighed to a maximum of 330 grams.

3. The material will be weighed to a maximum of 330 grams.

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30. The material will be weighed to a maximum of 330 grams.

6. Sintering

Process: The "green" compacts will be sintered in a hydrogen atmosphere furnace.

Limit: 1,000 grams of U-235 in up to 30 compacts containing

maximum of 33 grams each.

Note: The sintering furnace is a maximum of 100 days or 1000

hours of use containing a maximum of 10 runs each.

7. Cooling

Process: The compacts will be cooled in a dry hydrogen

atmosphere. It is no longer necessary to handle the compacts in a dry

atmosphere. Limit: 1,000 grams of U-235 in up to 30 compacts containing a

maximum of 33 grams each.

8. Inspection

Process: The cores will be checked at an inspection station

for compliance with dimensional and surface specifications.

Limit: 1,000 grams of U-235 in up to 30 compacts containing a

maximum of 33 grams each.

9. Weighing

Process: The cores will be weighed on an analytical balance.

Note: This operation may be omitted at Sylon's discretion.

Limit: 1,000 grams of U-235 in up to 30 compacts containing a

maximum of 33 grams each.

10. Storage

Process: At this point in the fabrication schedule or at

previous points, if required, material may be stored in

in-process safes in the work area or in safes or racks in

the accountability vault. The limits for the amount of

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Final Fabrication

Process: From this point on the cores will be clad by the "picture frame technique" rolled into plates, and assembled into fuel elements as specified in our present license.

Limit: For the purpose of the work covered by this application the limit will be 1,000 grams of U-235 rather than the lower limit specified in our present license. This will be handled in lots of up to 30 cores, or "picture frames" or plates containing up to 30 cores, each core having a maximum of 33 grams.

CONTROL OF MATERIAL QUANTITIES

and all units specified above shall be limited to the amount of material specified in the following table. Material shall be weighed or counted into the tote-trays or racks only by an accountability representative in accordance with the limits set in this modification and changes in the amount of material in a tote-tray or rack will be made only by an accountability representative. In accordance with this modification, except blending (A. 3.) and sintering (A. 6.), only one such tote-tray or rack will be permitted at any one operation.

Control of material quantities will be maintained by moving all material in tote-trays or racks holding only the number of bottles, cores, or plates specified. Material will be initially weighed or counted into the tote-trays or racks only by an accountability representative in accordance with the limits set in this modification and changes in the amount of material in a tote-tray or rack will be made only by an accountability representative. In accordance with this modification, except blending (A. 3.) and sintering (A. 6.), only one such tote-tray or rack will be permitted at any one operation.

[The following text is extremely faint and largely illegible due to heavy noise and low contrast in the scan. It appears to be a series of paragraphs describing a process or procedure.]

SAFETY PRECAUTIONS

1. All operations involving the use of radioactive materials should be carried out in a well-ventilated area. 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2. Neither powder nor "green" compacts will be handled with bare hands. During most operations these will be handled with forceps or through the rubber gloves of the dryboxes.

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UNITED STATES, ATOMIC ENERGY COMMISSION,

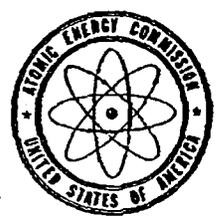
Annual Report to Congress,

OF THE

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LETTER OF SUBMITTAL

WASHINGTON, D.C.,
January 31, 1966.

SIRS: We have the honor to submit herewith the Annual Report of the United States Atomic Energy Commission for 1965 as required by the Atomic Energy Act of 1954.

Respectfully,

UNITED STATES ATOMIC ENERGY COMMISSION,
JOHN G. PALFREY.
JAMES T. RAMSEY.
GERALD F. TAPE.
GLENN T. SEABORG, *Chairman.*

The Honorable

The President of the Senate.

The Honorable

The Speaker of the House of Representatives.

III

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FOREWORD

TEXT OF LETTER FROM PRESIDENT JOHNSON TO DR. GLENN T. SEABORG, CHAIRMAN, ATOMIC ENERGY COMMISSION, APRIL 18, 1965

Dear Dr. Seaborg:

"I wish to thank you for the two very informative reports* describing the Atomic Energy Commission's activities during 1964.

"Since my association with our atomic energy programs began in the House of Representatives nearly 20 years ago as a member of the Joint Committee on Atomic Energy, I have followed the program closely.

"I want you and your fellow Commissioners to know that your reports impress me from a number of points of view.

"First, they present solid evidence that the Commission is pursuing a vigorous program of nuclear weapons research and development;

"Second, they make it clear that a steadily increasing proportion of the Commission's budget is being devoted to the peaceful applications of the atom, a matter which is particularly gratifying to me; and

"Third, they clearly reflect that the Nation is being well served through the healthy partnership of our Government with our industries and universities.

"As you and I have often discussed, it is essential at all times that we look far ahead in our planning for this vital activity. I would, therefore, like to convey to you some of my views and hopes in relation to the program.

"We have been able to maintain our clear superiority in nuclear weapons, while at the same time we have been responsible and realistic about our needs. The orderly cutback in the production of fissionable materials is a significant example of this realism.

"I appreciate the Commission's cooperation in the advancement of measures for effective arms control. I look forward hopefully—and confidently—to the day when our national security and the security of the human race can be further increased through agreements and actions among nations which build upon the important first step of the limited test ban treaty.

"I look for the continuation of the important progress that is being made in the peaceful uses of nuclear energy. For example, in the field of civilian nuclear power, I look forward to the development of the advanced converter and breeder reactors, which will be required for the more efficient and economical use of our Nation's nuclear fuel resources. Nuclear energy will fill an important role in partnership with fossil fuels in meeting the growing energy requirements of our Nation. As you know, I also anticipate that nuclear power will play a significant role in the desalting of sea water.

"It is characteristic of nuclear energy that its great potential is continually expanding. The full range of its ultimate contributions cannot be foreseen. We must continually press toward the discovery of areas and applications of which we have not yet dreamed, even as we strive to realize the full potential of the areas already defined.

*The two reports referred to are the Commission's "Annual Report to Congress for 1964" and the supplemental report, "Fundamental Nuclear Energy Research—1964."

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"Basic to all of the applications of nuclear energy is the conduct of fundamental research in the physical and biomedical sciences, and I favor the vigorous pursuit of these activities.

"On the other hand, we must also remember—keeping in mind always the essentiality of Government control of the uses of nuclear energy in the interest of the national security and public safety—that nuclear energy, after a period of intensive development, is now an integral part of the American industrial scene. It should not be regarded as a Government preserve. I look forward to the assumption by the private sector of our economy of a steadily increasing share of the responsibility for the development of the applications of nuclear energy.

"In the field of the application of radioactive isotopes, I would like to see continued emphasis on the development of this humanitarian tool for the diagnosis and treatment of disease. I believe that we have only begun to realize the potential of these remarkable substances for the alleviation of human suffering. I also want to encourage continued development of their application to industrial and other processes.

"In the field of space, we should continue the development of isotopic and reactor SNAP devices to enable us to take advantage of their unique application to the generation of electric power for our spacecraft. The recent successes of the nuclear-rocket reactor tests indicate that nuclear rockets can be ready for the long-range space missions of the future.

"In the field of education, the contributions made by the Commission are many and appreciated. I believe we can achieve even closer cooperation between the many Government laboratories and the universities throughout this country. The national resources in these laboratories can benefit the research and education processes in the universities. The laboratories will, in turn, greatly profit from their association with the universities.

"I wish to commend particularly a use of advanced planning by the AEC which is being carried out without much fanfare, but so very effectively. Thus, for example, the cutbacks in special nuclear materials production were planned sufficiently in advance so that the Commission, in cooperation with the local officials and business and labor people, could take appropriate actions, such as diversification programs, to minimize any significant economic impacts.

"Our capacity for achievement in atomic energy development never has been greater. The Commission has achieved a high degree of cooperation with private industry and the universities. The Congress, especially the Joint Committee on Atomic Energy, has effectively supported our nuclear program. This team in being—of government, industry, and the educational community—constitutes an unparalleled force for accomplishment. I look to the Commission to continue and further enhance these effective and harmonious relationships.

"On this course, I believe we shall ultimately achieve a society in which man can live in peace, enjoy the freedom and personal security to shape his destiny according to his individual beliefs, and have the leisure to contribute to the culture of his civilization. I recognize that our goals will not be easily reached. There will be disappointments and hard choices in priorities to adjust to continually changing requirements and circumstances. We have the will and the capacity. We also clearly have the duty. For if man would inherit from the generations that have preceded him, he must bequeath something of value to the generations that succeed him."

Sincerely,

(S) LYNDON B. JOHNSON.

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Chapter 11

ADVANCED REACTOR TECHNOLOGY AND NUCLEAR SAFETY RESEARCH

During the year, the advanced reactor technology program continued to make progress in providing basic information applicable to the development and improvement of reactor systems of all types. In mid-August the Commission appointed a steering committee, composed of top AEC officials, to coordinate the reactor safety research program.

ADVANCED REACTOR TECHNOLOGY

Development of Research and Test Reactors

The advanced reactor technology program includes research and development work necessary for the design and construction of advanced reactor facilities for research and irradiation testing. Important current projects include the 100-thermal-megawatt High Flux Isotope Reactor (HFIR) at Oak Ridge, the Argonne Advanced Research Reactor (AARR), the High Flux Beam Reactor (HFBR) at Brookhaven National Laboratory, the 250-thermal-megawatt Advanced Test Reactor (ATR) in Idaho, and the High Temperature Lattice Test Reactor (HTLTR) near Richland, Wash.

HFIR. During the year, HFIR construction was completed, and operation of the reactor at powers up to 50 thermal megawatts (Mwt) was achieved. Post-operational development work is being continued to reduce fuel element fabrication costs and increase the fuel element cycle time. (See also Chapter 14—Facilities and Projects for Basic Research.)

AARR. Engineering design of the AARR (also referred to as the A²R²) was started with the award of a contract in March to Burns & Roe, Inc., of New York City, to perform architect-engineer services. Operation of this advanced research reactor facility at Argonne Na-

tional Laboratory is expected to start in 1970. Development tasks are in progress to provide the design bases for fuel elements, control blades, and other reactor internals. In 1965, critical experiments were conducted in which nuclear mockups of the core at several stages of burnup were studied. (See also Chapter 14—Facilities and Projects for Basic Research.)

HFBR. Construction of the 40-thermal-megawatt High Flux Beam Reactor was completed and criticality achieved in October 1965. This heavy water moderated and cooled research reactor incorporates design features to reduce the fast neutron background while enhancing the low energy neutron flux to the beam tubes from which streams of neutrons are extracted for basic research external to the reactor. In addition to the beam tubes, irradiation facilities are provided in the reflector and central core areas of the HFBR where a maximum flux of more than a quadrillion (1.6×10^{25}) neutrons per square centimeter per second will be provided at full power.

ATR. The 250-thermal-megawatt Advanced Test Reactor (ATR) under construction at the National Reactor Testing Station in Idaho is scheduled for initial startup early in 1966.

System tests conducted in January 1965 disclosed leaks in two of the four primary heat exchangers. Subsequent examination indicated that excessive vibration at certain flow conditions resulted in abrasive wear which damaged about 6 percent of all the tubes in the four exchangers; the remaining 94 percent of the tubes were considered reusable. The Westinghouse Electric Corp., Sunnyvale, Calif., was selected in June to dismantle, redesign, and repair the four exchangers, and to design and fabricate a fifth exchanger for excess coolant capacity and redistribution of the pressure at a lower flow rate. It was estimated that about a year would be required to complete this work.

The heat exchanger modification did not significantly affect the schedule for ATR operation, since various system tests and low-power physics studies were performed concurrently with the modification. Criticality of the ATR is expected early in 1966, and attainment of full power in the summer of 1966.

Design and procurement continued throughout the year on a 2,000° F. helium-cooled irradiation loop to be installed in the ATR, with completion expected in 1967.

HTLTR. Construction of the High Temperature Lattice Test Reactor (HTLTR) for the Pacific Northwest Laboratory at Richland, Wash., is expected to be completed in 1966. The HTLTR will be used to obtain fundamental reactor physics data for high-temperature, solid

moderator reactor part of design and Extensive testing formed throughout

Reactor Experiments

During the year of advanced reactor important techniques of the following the Experimental gating beryllium reactor systems; (UHTREX), for tests of high integr



EBOR Completed. The Experimental Beryllium Moderator Reactor (EBOR) is an experimental moderated reactor steam cycle. The reactor was developed for the AEC by Gen

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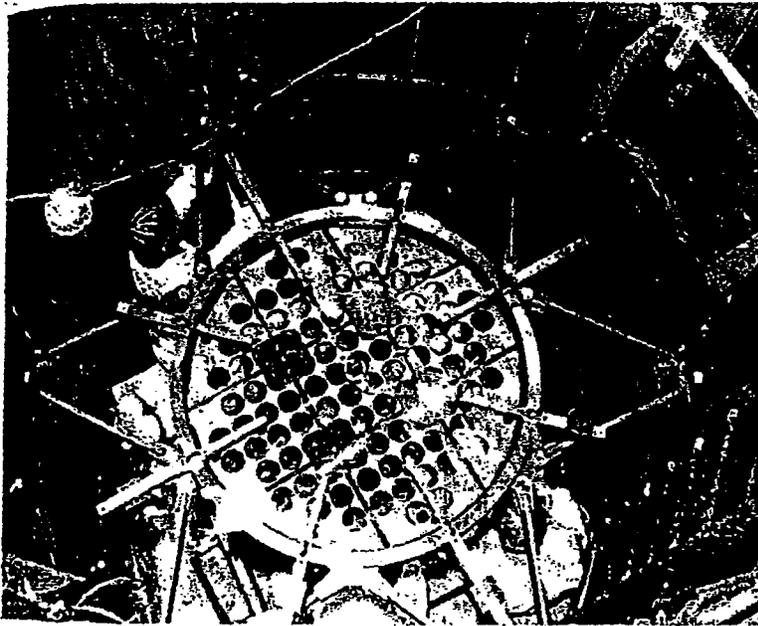
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moderator reactor lattices, and nuclear engineering data for the sup-
port of design and safety analyses of high-temperature power reactors.
Extensive testing on the materials to be used in the reactor was per-
formed throughout 1965.

Reactor Experiments

During the year, research and development continued on a number
of advanced reactor experiments which show promise of contributing
important technical information pertinent to the ultimate exploitation
of the following specific reactor concepts for varied applications:
the Experimental Beryllium Oxide Reactor (EBOR), for investi-
gating beryllium oxide as a moderator in high-temperature gas-cooled
reactor systems; the Ultra High Temperature Reactor Experiment
(UHTREX), for studying the fission product retention characteris-
tics of high integrity ceramic fuels and the problems of dealing with



EBOR Completed. Workmen are shown installing the lower core support for the Experimental Beryllium Oxide Reactor (EBOR) which was 99 percent complete in the fall of 1965 at the National Reactor Testing Station in Idaho. EBOR is an experiment on high-temperature, helium-cooled, beryllium-oxide-moderated reactors which could be used with a closed-cycle gas turbine or steam cycle. The reactor experiment was designed and will be operated for the AEC by General Atomic Division, General Dynamics Corp., San Diego.

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(2)

SYLVANIA-CORNING NUCLEAR CORPORATION
MINUTES OF REGULAR MEETING OF BOARD OF DIRECTORS
December 20, 1960

Pursuant to the By-laws of the corporation and to resolution duly adopted by the Board at its meeting of May 17, 1960, a regular meeting of the Board of Directors was called to order on December 20, 1960 at 9:30 a.m., e.s.t., at the offices of Sylvania Electric Products Inc., 730 Third Avenue, New York City, New York.

There were present Lee L. Davenport, Bennett S. Ellefson, Herbert Trotter, Gerald Moran and Robert E. Lewis, constituting a quorum.

Also present were Arthur L. B. Richardson, Secretary, Marion E. Pettigrew, Senior Vice President of Sylvania Electric Products Inc. and Charles Hansen, Counsel.

The Chairman of the Board presided and at his request Mr. Hansen kept the minutes of the meeting.

The Chairman announced that the first order of business was approval of the minutes of the November 15, 1960 regular meeting of the Board of Directors. A copy of the minutes was presented to, and ordered filed with, the records of the meeting.

Whereupon on motion duly made, seconded and unanimously carried, it was

- 2 -

RESOLVED, that the minutes of the regular meeting of this Board held on November 15, 1960 as presented to this meeting, be and hereby are approved, and that all action taken at said meeting as recorded in the said minutes be and the same hereby is approved, ratified and confirmed.

The President reported to the Board certain conversations which he had with the stockholders of the company, and described certain events and developments which had occurred during the last six months as a result of which it now appears to be in the best interests of the company and its stockholders to dissolve and liquidate the company. In pursuance thereof, the President submitted a Plan of Complete Liquidation for the company as prepared by the company's management.

After a full discussion, upon motion, duly made, seconded and carried, it was unanimously

RESOLVED, that it is deemed advisable in the judgment of the Board of Directors and most for the benefit of this corporation that it should be dissolved.

FURTHER RESOLVED, that the proper officers of this corporation, if all the stockholders having voting power consent in writing to a dissolution, be and hereby are authorized to file such written consent with the Secretary of State of Delaware, and to cause the certificate of dissolution issued by the Secretary of State to be recorded in the office of the Recorder of Deeds of New Castle County.

FURTHER RESOLVED, that the Plan of Complete Liquidation of the company submitted by the President to the Board at this meeting be and the same is hereby adopted; and a copy of said Plan shall be attached to and made a part of the Minutes of this meeting.

- 3 -

FURTHER RESOLVED, that the President, any Vice President, the Treasurer and the Secretary be and each of them hereby is authorized to take all steps and do all things necessary or appropriate to insure that the complete liquidation of the company occurs on December 31, 1960 in accordance with the terms of the aforesaid Plan of Complete Liquidation.

Dr. Davenport next stated that it now appears likely that this corporation will be the successful bidder on the contract with the Philips Petroleum Corporation for the supplying of nuclear fuel elements. He indicated that although no contract had as yet been awarded, Sylcor is the low bidder and the government has indicated its wishes to negotiate. Dr. Davenport felt that if past experience is any indication, we would quite probably be awarded a contract and that such contract would occupy 80% of the capacity of the Hicksville commercial fuel element plant for 1961. This work can be performed on a break-even basis in contrast to the unprofitable nature of the work done in such plant in the past.

In addition, Dr. Davenport reported that the corporation had obtained some 60% of all contracts on which it has bid during 1960. The consensus of the Board was that this was an enviable record.

Dr. Davenport indicated that the losses for the month of November were again better than anticipated and that year-to-date losses have averaged well below the \$80,000 per month budgeted. A copy of Dr. Davenport's financial report was presented to the Board and ordered filed with the records of the meeting.

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The next order of business was to review salaries and bonuses for the top executives of the corporation. The consensus of the Board was that Mr. Grant LaPier should receive a salary increase in view of the increased responsibilities which he has assumed, but that the other executives considered were being equitably paid at the present time and should not receive additional compensation. Consistent with this expression of the Board's wishes, Dr. Davenport presented a document entitled "Monthly Rates of Compensation of Key Employees Commencing January 1, 1961". A copy of this document was ordered filed with the records of the meeting.

Whereupon on motion duly made, seconded and unanimously carried, it was

RESOLVED, that the compensation to be paid by this corporation to Mr. Grant LaPier effective January 1, 1961, and so long as he thereafter remains an employee or until further action of this Board, shall be at the rate indicated beside his name in the schedule entitled "Monthly Rates of Compensation of Key Employees Commencing January 1, 1961", as presented to and filed with the records of this meeting; provided, however, that nothing in this resolution shall be construed to deprive the aforementioned official to entitlement to any benefits under any program of fringe benefits of future applicability to the employees of the corporation.

The Board then proceeded to consider the bonuses proposed for certain executives of the corporation. Dr. Davenport presented a schedule of recommended bonuses entitled "Proposed Declaration of Bonuses - 1960" which was revised to take into account the thoughts expressed by the members of the Board. A copy of this document was

-5-

ordered filed with the records of the meeting. Dr. Davenport noted that the bonuses were proposed in accordance with the Board's expressed wish that bonuses be given for superior performance.

Thereupon on recommendation by the President and by motion duly made, seconded and carried, it was

RESOLVED, that there be and hereby is declared a bonus to each of the respective officers and executives of this corporation listed, and in the amounts set forth next to their respective names, in the schedule entitled "Declaration of Bonuses - 1960" as presented to this meeting, and that the Controller of this corporation, present or future, for the time being in office, be and hereby is authorized and directed to take all steps necessary and advisable to effectuate payment of said bonuses to said persons on or after January 1, 1961.

The President then proposed that in accordance with an announcement previously made to the employees that there be a cost of living adjustment for the period from January 1 through November 1, 1960. It was recommended that such adjustment for hourly employees be in the amount of two cents per hour for each hour worked during the subject period and for salaried employees, other than those who received a bonus for the year 1960, in the amount of four dollars per month for each month worked during the subject period. Whereupon, upon motion duly made, seconded and unanimously approved, it was

RESOLVED, that a cost of living adjustment as outlined to the Board be and hereby is approved.

There being no further business to come before the meeting, on motion duly made, seconded and unanimously carried, it was

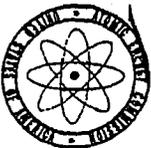
RESOLVED, that the meeting hereby is adjourned.

Adjourned: 11:30 a.m.

ATTEST:



USDOE 022381



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

DC FILE

MAY 17 1965

Uranium
28-9R

Mr. John F. Cooney
Resident Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Cooney:

This letter confirms Mr. Baranowski's telephone call to Captain Bauer of your staff advising that the Atomic Energy Commission has authorized the Savannah River Operations Office to reevaluate its cost-plus-fixed-fee contract with the Blyoxer Division, Blyvenia Electric Products, Inc., for fuel fabrication operations at the Blyoxer-owned plant at Hicksville, New York.

As you know, for a number of years Blyoxer has clad a portion of the fuel elements used in the SRP production reactors, of which the most recent have been the inner elements of the V-8 and V-9 design. Although the performance of Blyoxer has been excellent throughout the period of the contract, the shutdown of our SRP reactor in June 1964, and changing program requirements has led with conditions to reduce SRP's requirements for the type of fuel elements for which capability now exists at the Hicksville plant. Consolidation of all fuel element manufacturing at SRP will result in significant cost savings and enable K. I. du Pont de Nemours & Co., the operating contractor, to better utilize shutdown periods of fabricating requirements for the many alternate fuel types used in the production of the various reactor products assigned to SRP, such as tritium, U-233, curium, etc.

Further, du Pont has developed and converted its uranium casting facilities from the hot-press-bonding process to a hot-die-casting process which offers additional savings and a flexibility to accommodate changes in fuel element design without major changes in equipment. Blyoxer's only existing capability is for the hot-press-bonding process; therefore, it would have been necessary to equip Blyoxer for the hot-die-casting process in order to take full advantage of its potential cost savings and operational flexibility. SRP has adequate hot-die-casting capacity to handle the entire fuel load of outer and inner elements.

DOE History Division
Savannah Materials-AEC
Accession # 326-76-0000
Sol 654P
Box 214 USDOE 017916
F MHT-2 Savannah River
(Carbolic) January -
February December 1965

9-1-65
AM

M. J. J. J.
2 Copies -

SYLOR NICVL
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TO V HANDBARO SYLVANIA ELEC PRODUCTS INC SYLOR DIV HICKSVILLE NY
BT

ANCLAS WE HAVE REVIEWED THE PROBLEM OF DECONTAMINATION AND
RELEASE OF THE URANIUM FABRICATING PLANT AT HICKSVILLE AND HAVE
CONSIDERED LIMITS OF RESIDUAL CONTAMINATION WHICH MAY BE PERMITTED TO
REMAIN WHEN THE PLANT IS CLOSED.

SINCE IT IS OUR UNDERSTANDING THAT THE PLANT WILL BE SUBJECT TO
SALE OR OTHER DISPOSITION WITHOUT CONTROL AND SINCE LIMITS FOR
RESIDUAL CONTAMINATION HAVE NOT BEEN FIRMLY FIXED AND WIDELY
DISSEMINATED CMH WE RECOMMEND AND WILL SUPPORT DECONTAMINATION OF
FIXED ACTIVITY TO A LEVEL OF 2000 DISINTEGRATIONS PER MINUTE MAXIMUM
WHEN AVERAGED OVER A 100 CM2 AREA. IT IS TO BE UNDERSTOOD THAT RESIDUAL

PAGE 2 RUCBAX 184 ANCLAS
URANIUM ASSOCIATED WITH DUST OR DISPERSED AS THE OXIDE AND NOT FIXED
IN PLACE IS TO BE REMOVED BY VACUUMING OR OTHER SUITABLE MEANS TO A
MORE ACCEPTABLE LEVEL. SUCH REMOVABLE ACTIVITY SHOULD NOT EXCEED 10
PERCENT OF THE LIMIT STATED FOR FIXED RADIOACTIVE MATERIAL.

THE TRANSFER OF TRASH AND RUBBLE TO A BURIAL GROUND MAY BE
ACCOMPLISHED WITHOUT THE NECESSITY OF PLACING IT IN DRUMS BEFORE
LOADING ON A SUITABLE TRUCK SO LONG AS THE MATERIAL CAN BE SUITABLY
CONTAINED AND COVERED SO AS NOT TO ALLOW BOUNCING OR BLOWING OF SOLIDS
OR LEAKAGE OF LIQUID.

WHEN YOU HAVE SECURED BIDS ON THE JOB OF DECONTAMINATING THE PLANT
WE SHOULD LIKE TO REVIEW THE COST AND THE SPECIFICATIONS PRIOR TO
BEGINNING WORK REF ST-GRG
BT

NNNN

SYLOR NICVL

UNITED STATES GOVERNMENT

Memorandum

TO : P. J. Hagelston, Director
Safety & Technical Services Division, SR

FROM : Alex F. Perge, Chief, Materials Processing
Safety Br., Div. of Operational Safety, HQ

DATE: August 2, 1965



SUBJECT: SURFACE CONTAMINATION CONTROL CRITERIA FOR UNCONDITIONAL RELEASE OF CONTAMINATED PROPERTY

OS:MPS:AAS

Messrs. Herde and Collins, SR, have recently contacted A. Schoen of this office regarding acceptable radioactive surface contamination levels for the unconditional release of uranium contaminated facilities and equipment at the Sylcor plant in Hicksville. This office and the regulatory staff have been cooperating in the development of criteria governing the unconditional release of surface contaminated equipment, scrap, and facilities for inclusion in the federal regulations and revisions to AEC Manual Chapters 5170 and 5182. The appropriate changes in the regulations and the manual chapters are not final yet. However, the technical criteria have been agreed to and have been used for some time in the regulatory program and also certain AEC operations.

The table below lists the values that are presently considered acceptable for unconditional release and unrestricted use of facilities, equipment and scrap contaminated with normal, enriched or depleted uranium, natural thorium, and Th 232.

PERMISSIBLE SURFACE CONTAMINATION LEVELS

	<u>Fixed</u>		<u>Transferable*</u>
	<u>Average</u>	<u>Maximum</u>	<u>Maximum**</u>
	<u>(d/m/100 cm²)</u>		<u>(d/m/100 cm²)</u>
<u>Alpha</u>	5000	25000	1000
		(mrad/hr)	
<u>Beta - gamma</u>	0.2	1.0	

* Radioactivity which is detected by commonly used smear survey techniques.

** Average contamination levels are not specified. Items which are generally contaminated with transferable activity warrant further decontamination.



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

DOE Office of Site Closure
FUSRAP Room

P. J. Hagelston

- 2 -

August 2, 1965

Exceptions to these levels have been approved in specific instances where an inherent limitation on subsequent use, and a specific evaluation of the residual contamination levels indicated no significant health hazard to exist.

cc: P. M. Lum, OC
John A. Derry, CONS
William Devine/T. M. Yakimchick, P
Forrest Western, SS

17001

17001

U. S. ATOMIC ENERGY COMMISSION
Savannah River Operations Office

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

Patent Rev
Not to be used
12/2/66

THIS SUPPLEMENTAL AGREEMENT, entered into the 15th day of December, 1965, effective October 1, 1965, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government") as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission") and SYLVANIA ELECTRIC PRODUCTS INC. (hereinafter referred to as the "Contractor"):

WITNESSETH THAT:

WHEREAS, as of the 10th day of December 1951, the Commission and the Contractor entered into Contract AT(30-1)-1293 for the performance by the Contractor at its Hicksville, Long Island, Plant of certain work for the Commission; and

WHEREAS, said Contract has heretofore been amended from time to time to revise the scope of work and other provisions therein; and

WHEREAS, the Contract, as so amended and revised, now provides in Article VII - GOVERNMENT PROPERTY, that there shall be no charge to the Government for the storage of Government-owned property at the Contractor's Hicksville Plant for a period of 120 days after expiration of said Contract and in Article III - TERM, EXPIRATION AND TERMINATION, that upon expiration, the Contractor shall: (1) discontinue work thereunder, and (2) take such other action as may be required under the provisions of the Contract and subject to the approval of the Commission, such other action as may be appropriate; and

WHEREAS, said Contract expired on September 30, 1965, and the parties thereto now desire to make a written record of the appropriate work which it has been agreed shall be performed by the Contractor within 120 days after such expiration and of the terms and conditions under which such work will be performed; and

WHEREAS, this Modification has been prepared for the purpose of amending the parties' Agreement as aforesaid and for no other purpose;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

1. That within a period of 120 days beginning October 1, 1965, the Contractor shall perform the following work at its Hicksville Plant.
 - (a) Furnish or cause to be furnished all personnel, equipment, tools, and materials necessary to decontaminate the entire AT(30-1)-1293 Contract area at Sylcor's Hicksville, New York, facility including the demolition of Building No. 8. Said buildings and ground areas shall be decontaminated to 2000 dpm/100 sq. cms. (disintegrations per minute per 100 square centimeters) fixed alpha and 100 dpm/100 sq. cms. removable alpha.

CONFORMED COPY

USDOE 017193

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

- (b) Prepare, crate, and effect the shipment of Government property as directed by the Commission.
 - (c) Perform such accounting work in connection with the above as may be requested by the Commission.
2. As full and complete compensation for the work performed by the Contractor as provided in 1. above, the Government shall pay the Contractor:
- (a) For repair of damages caused to the Contractor's property by the removal of Government-owned property therefrom, the fixed sum of \$ -0- payable upon final financial settlement of this Contract.
 - (b) For all work except that referred to in (a) hereof performed by the Contractor pursuant to 1. above, the following:
 - (1) Direct labor and salaries at an actual cost basis, based on time records maintained by the Contractor. In addition, a fixed rate of 20% of direct labor and salaries shall be paid for fringe benefits and payroll taxes. These amounts shall be paid monthly as incurred and invoiced.
 - (2) Heat, lights, utility services, and miscellaneous materials used by the Contractor in the performance of work on an actual cost basis, payable monthly as incurred and invoiced.
 - (3) Decontamination of the Plant at a subcontract amount approved by the Contracting Officer, payable monthly as incurred and invoiced.
 - (4) For Hicksville Plant indirect expense (including management, accounting and all other overhead) plus home office general and administrative expense (corporate level), a fixed amount of \$5,030, payable when invoiced as follows: at October 31 - \$3,030; at November 30 - \$1,000; at December 31 - \$1,000.
 - (5) A fixed fee of \$1,860, payable when invoiced as follows: at October 31 - \$686; at November 30 - \$687; at December 31 - \$487.
3. Payments as provided in paragraph 2. above shall be made from obligated funds remaining available under this Contract as of September 30, 1965.
4. That this modification does not alter and shall not be interpreted to alter, change or modify in any respect the rights, duties and responsibilities of the parties as they existed on September 30, 1965, the date of the expiration of Contract AT(30-1)-1293.

Modification No. 42
Supplemental Agreement to
Contract No. AT(30-1)-1293
SYLVANIA ELECTRIC PRODUCTS INC.

IN WITNESS WHEREOF, the parties hereto have executed this Modification as of
the day and year first above written.

UNITED STATES OF AMERICA
BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ R. C. Blair

TITLE: Manager, SROO

WITNESSES:

/s/ M. Boll

Hicksville, New York
(Address)

/s/ Grace Golden

Hicksville, New York
(Address)

SYLVANIA ELECTRIC PRODUCTS INC.

BY: /s/ W. R. Mandaro

TITLE: Manufacturing Manager
Sylcor Division

I, J. M. Toohar, certify that I am Asst. Secretary
of Sylvania Electric Products Inc., named above; that W. R. Mandaro
who signed this Agreement on behalf of said corporation, was then Mfg. Mgr.
Sylcor Division of said corporation, and that this Agreement was
duly signed for and in behalf of said corporation by authority of its governing
body and within the scope of its corporate powers.

Witness my hand and seal of said corporation this 6th day of December,
1965.

(CORPORATE SEAL)

/s/ J. M. Toohar

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

UNCLASSIFIED

TO : J. S. Hopkins, Director
Administrative Division

FROM : *(Signature)*
A. Y. Morgan, Director
Budget and Finance Division

SUBJECT: REVISED SYLOR PROPOSALS P-65-3 AND P-66-2

DATE: SEP 20 1965

Document No. SR-FB-1180

This document consists of 4 pages

No. 1 of 7 copies. Series A

DEPARTMENT OF ENERGY SAVANNAH RIVER RECLASSIFICATION REVIEW
 Determination (Circle Number)
 1. Classification Unchanged
 2. Classification changed to:
 3. Classification Cancelled
 4. Other: C/N/P-2 9-00
 1st Review Date 7/3/65
 Authority: ABC UNDD
 Name: J.B. Alach
 2nd Review Date 4/3/65
 Authority: ADP
 Name: Herbert J. ...

FB:MER:ebk

We have reviewed Sylcor's revised proposals for the period ending September 30, 1965 and submit the following for your consideration in modifying the contract.

I. Scope Changes

The changes that warrant a revision in the fee base are:

- (a) Reduction in Mark V-E production - August and September 1965 82,000 lbs.
- (b) Reduction in Mark V-E production - July 1965 13,500 lbs.
- (c) Underrun in fabricated equipment
- (d) Close-out costs equipment dismantling, decontamination, etc.

With the above scope changes we have derived the following fee base, all items being based on estimated costs.

	P-65-2	P-65-3	P-66-2	Total Revised	Current P-65-2	Change + or (-)
Mark V-B Reg.	\$169,380	\$ -0-	\$ -0-	\$ 169,380	\$ 169,380	\$ -0-
Mark V-B 12"	97,660	-0-	-0-	97,660	97,660	-0-
Mark V-E	523,650	201,100	-0-	724,750	922,930	(198,180)
Thorium	5,760	-0-	-0-	5,760	5,760	-0-
Fab. Equip.	29,060	2,400	-0-	31,460	45,950	(14,490)
Termination	-0-	46,890	182,820	229,710		229,710
Subcontract for Decontamination	-0-	-0-	(58,400) ^{b/}	(58,400) ^{b/}	-0-	(58,400)
V-E Underrun - July	-0-	(25,480) ^{a/}	-0-	(25,480) ^{a/}	-0-	(25,480)
Total	\$825,510	\$224,910	\$124,420	\$1,174,840	\$1,241,680	\$(66,840)
Fee @ 6%				\$70,490	\$74,501	\$(4,011)

a/ This represents Sylcor's estimate of the cost of producing 1,456 V-E Slugs or about 13,500 pounds which were scheduled to be produced in July 1965 in P-65-3, but were not produced.

b/ This represents the estimated subcontract costs for decontamination which are not expected to be incurred in the contract period ending September 30, 1965.

~~RESTRICTED DATA~~
 This document contains Restricted Data as defined in the Atomic Energy Act of 1954 and its amendments. It is to be controlled, stored, transmitted, and disposed of in accordance with the provisions of the Atomic Energy Act of 1954 and its amendments.

UNCLASSIFIED
~~SECRET~~

GROUP 1
 EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

Savings Bonds Regularly on the Payroll Savings Plan

J. S. Hopkins

SEP 20 1965

Actual cost and production is compared with the estimates in the following table.

	Estimates 10/1/65 - 9/30/65	Actual 10/1/64 thru 7/3/65	Variation
<u>Production</u>			
Mark V-E lbs.	421,074 <u>c/</u>	422,446	1,372
Mark V-B Reg. lbs.	128,000	126,995	(1,005)
Mark V-B 12" sets	560	653	
Thorium d/	-	-	
 <u>Costs</u>			
Mark V-E	699,270	781,084	81,814
Mark V-B 8"	169,380	222,465 <u>e/</u>	53,085
Mark V-B 12"	97,660	85,004	(12,656)
Thorium	5,760	28,496	22,736
Equip. fab.	31,460	43,115	11,655
Termination	<u>171,310</u>	<u>37,897</u>	<u>(133,413)</u>
Total Costs	<u>1,174,840</u>	<u>1,198,061</u>	<u>23,221</u>

c/ 96,000 lbs P-65-1 Oct-Nov 1964; 216,000 lbs Dec-April P-65-2; 122,574 lbs P-65-3; (13,500) lbs P-66-2

d/ Basically completed prior to this contract period for fee purposes

e/ Includes 47,523 costs of write-off of Inv. & Alcoa cancellation

Conclusion

Sylcor has basically performed their production requirements as established in the contract. A fee of \$70,490 should be negotiated for the year ending September 30, 1965. The \$58,400 included in their proposal P-66-2 of September 8, 1965 for decontamination should be deleted from this proposal. An amount of \$25,480 should be deleted from their proposal P-65-3 of June 1, 1965 for not completing about 13,500 lbs. of Mark V-E elements.

A new contract will be negotiated to cover termination costs beyond September 30, 1965, with fee being paid to assure a competent job of decontamination by a subcontractor.

Contract Finance Information

<u>Obligations</u>	<u>Operations</u>	<u>Equipment</u>	<u>Total</u>
Unpaid Obligations 6/30/65	\$ 512,226	-0-	\$ 512,226

~~SECRET~~

J. S. Hopkins

- 3 -

SEP 20 1965

Contract Finance Information (cont'd)

<u>Requirements</u>	<u>Operations</u>	<u>Equipment</u>	<u>Total</u>
Working Capital 6/30/65 (negative)	\$ 9,155	-0-	\$ 9,155
Costs - July Actual	54,811		54,811
Costs - August and September - P-66-2	131,884	-0-	131,884
Fee Withheld (Est.)	10,985	-0-	10,985
Commitments 9/30/65 (Est.)	100,000	-0-	100,000
Total Requirements	<u>\$ 306,835</u>	<u>-0-</u>	<u>\$ 306,835</u>
Deobligate This Modification	<u>\$(205,391)</u>		<u>\$(205,391)</u>
Equipment			<u>\$(2,516)</u>
Operations & Fee			<u>\$(202,875)</u>

The Revised Estimated Cost is as Follows

<u>Activity</u>	<u>P-66-2</u>			<u>Inc. Fee P-65-2</u>	<u>Change</u>
	<u>Cost</u>	<u>Fee</u>	<u>Total</u>		
Mark V-E	\$ 739,128	\$41,956	\$ 781,084	\$ 980,157	\$(199,073)
Mark V-B Reg.	212,302	10,163	222,465	173,258	49,207
Mark V-B 12"	79,144	5,860	85,004	96,973	(11,969)
Thorium	28,151	345	28,496	27,153	1,343
Fab. Equip.	41,228	1,887	43,115	50,200	(7,085)
Purchased Equip.	9,038	-0-	9,038	9,800	(762)
Termination	152,038	10,279	162,317	-0-	162,317
Total	<u>\$1,261,029</u>	<u>\$70,490</u>	<u>\$1,331,519</u>	<u>\$1,337,541</u>	<u>\$(6,022)</u>

Recap of Costs & Fixed Fee and Obligations

	<u>Mod. 40</u>	<u>Increase (Decrease)</u>	<u>Mod. 41</u>
Operating Costs	\$30,239,302	\$(198,864)	\$30,040,438
Plant and Capital Equip. (Beginning July 1, 1965)	261,289	(12,516)	248,773
Fixed Fee (Operations)	1,712,082	(4,011)	1,708,071
Total Estimated Cost	<u>\$32,212,673 a/</u>	<u>\$(215,391)</u>	<u>\$31,997,282</u>
Commission Obligation	\$32,202,673	\$(205,391)	\$31,997,282
Operation & Fee	-	1,825	
Equipment	-	(2,516)	
Commitments Operating	-	(204,700)	

a/ Included 10,000 Equipment First Quarter FY 1966 Not Obligated

~~SECRET~~

USDOE 017796

~~SECRET~~

J. S. Hopkins

- 4 -

SEP 0 1965

Contract Article Changes

1. Paragraph 1., Estimate of Cost and Fixed Fee, of Article IV - ESTIMATES OF COSTS, OBLIGATION OF FUNDS AND FIXED FEE is revised to read as follows:

"1. Estimate of Cost and Fixed Fee. The presently estimated cost of the work under this Contract is \$30,289,211, exclusive of the Contractor's fixed fee. The Contractor's fixed fee as set forth in paragraph 2., of Article V of the Contract is \$1,708,071. The estimated cost of the work, as described in paragraph 1. of the Article entitled Scope of Work for the period October 1, 1964, to September 30, 1965, is \$1,174,840, exclusive of the Contractor's fixed fee of \$70,490." *1,241,029 (changed by Telecom w/ Robinson 10/27/65)*

2. In paragraph 2., Obligation of Funds of Article IV - ESTIMATE OF COST, OBLIGATION OF FUNDS, AND FIXED FEE, the figure "\$32,202,673" is deleted and the figure "\$31,997,282" is substituted therefor.

3. Subparagraph (f) of paragraph 2., Fixed Fee, of Article V - ALLOWABLE COST AND FIXED FEE is revised to read:

"(f) The fixed fee applicable to work performed during the period October 1, 1964, to September 30, 1965, is \$70,490."

4. Subparagraph (f) of paragraph 2., Payment of Fixed Fee, of Article VI - PAYMENTS is revised to read:

"(f) For the period October 1, 1964, through September 30, 1965, ninety percent (90%) of the fixed fee of \$70,490 shall become due and payable in monthly installments as follows:

October-November 1964	\$6,856
December, 1964 - July, 1965	5,334
August-September, 1965	3,528

cc: J. J. Wise, Manager's Office, cy. 2A
R. A. Messick, B&F, cy. 3A
N. J. Donahue, T&P, cy. 4A

~~SECRET~~

USDOE 017797

(2)

DECONTAMINATION OF
SYLCOR 1293 AREA
HICKSVILLE, LONG ISLAND, NEW YORK

F. J. Bradley, Ph.D.
Health Physicist

ISOTOPES, INC.
123 Woodland Ave.
Westwood, New Jersey

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I. INTRODUCTION

A. Initial Surveys

The planning and execution of the decontamination operations at the Sylcor Area #1293 was under the direction of Dr. F. J. Bradley, Health Physicist to Isotopes, Inc. The decontamination plan was prepared as a result of a complete survey of the area, and subsequent experience required little modification to the original concept. The time schedule was closely adhered to for the decontamination operation per se, but slippage occurred by the difficulties experienced in transporting the wastes off-site. This latter contingency was not, however, under the immediate control of Isotopes, Inc.

The surveys were made using an alpha survey meter (Eberline Model PAC-3G) for the determination of fixed contamination levels, and smears were taken using Whatman 41 filter paper to determine levels of transferable contamination. All smears pre- and post-decontamination were counted in a windowless gas flow counter operating in the alpha proportional region and having an absolute counting efficiency of 50%. Both the windowless flow counter and the Eberline Instrument Company PAC-3G portable counter were calibrated with a Pu-239 alpha standard with an activity of 2914 dpm.

B. Cleaning Techniques

The general decontamination procedure was to first survey, then in turn dry vacuum, scrub and wash, wet vacuum, followed by a further survey. The procedure would be repeated until decontamination was complete or the surface removed. The procedure was, in fact, repeated for several areas four times

Isotopes, Inc.

before it became apparent that complete removal of the area was required. On the other hand, Building #8 was demolished and the surrounding concrete and macadam removed without prior attempts at decontamination except for dry vacuuming.

Liquid wastes generated in the scrubbing, washing and wet vacuuming operation were transferred to steel drums and vermiculite added to convert from liquid to solid wastes.

Personnel involved were provided with disposable cover clothing, shoe covering, gloves, and respirators where necessary. All heavy construction equipment used in decontamination operations were monitored by Isotopes, Inc. before reverting back to normal non-radiation use.

II. SCHEDULE OF DECONTAMINATION OPERATIONS

A. Building #1

1. Pre-Decontamination Survey

The building was divided for operational convenience into 59 sections encompassing approximately 20,000 square feet within the confines of a one-story structure. The results of the initial smear survey are given in Appendix A. This survey indicated that extensive decontamination would be required in the metallographic and adjacent laboratory areas (Sections 14, 15, 24, 25, 26, 27 and 28). The floors in these areas were covered with linoleum tile, or a mastic floor covering and the rooms were serviced by seven exhaust ducts, at least four of which were internally contaminated.

Sections 49 and 52 housed a conveyor area which was contaminated with uranium in soluble form. Since the area was covered in part with brick or ceramic tile it was assumed that some of the uranium had penetrated the cracks and that brick and tile, in part at least, would need to be removed. Two areas adjacent to the conveyor area, Sections 51 and 54, also showed evidence of smearable contamination and would require decontamination.

On the roof of Building #1 there were two areas which required decontamination. The exhaust system including fan and filter for the metallographic area would need to be removed and a contaminated wooden shack over section 52 cut down.

The exterior concrete area adjoining section 52 was also found to be contaminated. Since soluble uranium had penetrated the porous concrete to an unknown depth, the standard decontamination procedure would be followed initially, but should these procedures prove ineffective the concrete would be removed.

Isotopes, Inc.

2. Decontamination

In room 14 the contaminated ductwork was removed by cutting down, sealing the ends with plastic sheet and passing up to the roof through a hole in the ceiling. This procedure facilitated removal and also prevented spread of activity in the building. The ductwork was then lowered off the roof and placed onto trucks for shipment off-site as radioactive waste. The walls and floor were then subjected to the standard decontamination procedure. Altogether this procedure was repeated three times. In some places one layer of floor tile in others two layers of tile had to be removed before the room was brought within acceptable limits.

Rooms 15, 24, 25, 26, 27 and 28 were decontaminated in the standard manner together with the removal of tile of "mastic" floor covering in a few places.

The plating area comprising sections 49 and 52 were decontaminated three times by the standard procedure which brought the smearable contamination well within limits, but nevertheless fixed contamination levels remained above acceptable limits. In the final washing in this area dilute hydrochloric acid solutions with "Radiac Wash" were used, but this appeared to increase the level of surface contamination since uranium was brought up through the cracks. Since the prescribed limits could not be reached by washing and scrubbing, all of the ceramic tile and about one quarter of the facing brick on conveyor pad were removed. This procedure exposed several further contaminated areas and the whole area was cleaned again.

Sections 51 and 54 were simply washed and scrubbed three times and were readily brought within limits.

Three more areas in Sections 48 and 50 not included in the preliminary survey were found to be contaminated but responded to decontamination by standard techniques.

On the roof the filtering system for section 14 was cut down and lowered off the roof. The wooden shack over section 52 was removed in a similar manner.

Several areas in the building which were within the acceptable range for transferable contamination, but not fixed contamination, were covered over with a permanent plastic sealer. These areas were found to be isolated instances and not general in extent. The only alternative would have been the removal of the concrete floor.

The concrete pad outside section 52 was washed, scrubbed, vacuumed four times, the last time with an acid solution of pH3. Despite such vigorous washing and scrubbing, even with metal brushes, the fixed contamination limits were not reached. In fact, the acid solution appeared again to have the effect of bringing dissolved uranium to the surface. This whole concrete area was therefore removed and the concrete shipped off-site.

B. Building #2

1. Pre-Decontamination Survey

Building #2 was a one story, wooden frame structure with an area of approximately 32,000 square feet. The uranium which had been in this building proved less soluble than that in Building #1 and therefore the washing procedure might be less effective than scrubbing. The building for purposes of the survey and decontamination was divided into 45 sections.

Isotopes, Inc.

Portions of section #27 gave survey meter readings above 2000 dpm/100cm² although smears were within the acceptable range. Since the floor was covered in part with a layer of grease it was felt that the use of grease cutting agents in cleaning solution would remove the contaminant.

Sections 33 and 34 were a locker washroom with tile floor; standard decontamination procedure with removal of tile where necessary was anticipated for this area.

Section 45 showed evidence of considerable floor contamination. It was expected that two repeat standard decontamination procedures with possible removal of some concrete layers would be sufficient.

Two areas, one exterior to section 20 and the other exterior to section 27, were thought to require decontamination by cleaning and possibly by removal of concrete.

2. Decontamination

Section 27 was given the standard decontamination procedure and brought to within acceptable limits after three washing-scrubbing combinations. The section was more generally contaminated than originally thought and therefore the whole machine shop area (sections 27 and 30) was thoroughly cleaned. Apparently the contamination had not penetrated deeply since the area was decontaminated relatively easily. In checking the ceiling a heavily contaminated exhaust duct was discovered and this required careful cutting and subsequent removal to prevent the spread of contaminated dust.

Sections 32, 33, 34, 35 and 38 were washed and scrubbed and readily brought within limits.

The Production Machining Section, 45, was decontaminated using the standard procedures three times followed by an acid solution of PH3. Uranium was found embedded in the tape which outlined access walks in the room. Removal of the tape left no residual traces. The room was brought within acceptable limits for removable contamination with few problems but more difficulty was experienced with fixed contamination.

Section 31 was decontaminated by washing and scrubbing and the removal of dry-wall up to a height of five feet on one wall.

The exterior areas adjacent to sections 20 and 27 were cleaned by vigorous washing and scrubbing.

In a few areas in Building #2 which were within acceptable limits for transferable contamination, but not for fixed, were covered with a permanent plastic sealer.

C. Building #7

1. Pre-Decontamination Survey

The concrete floor of Building #7 showed relatively low levels of contamination. One or possibly two standard decontamination procedures were deemed adequate to reduce the contamination level to acceptable limits.

2. Decontamination

The floor and walls up to a height of five feet were cleaned twice in the standard manner and the activity levels in the building were thereafter within acceptable limits.

D. Building #8 and Adjoining Exterior Areas

1. Pre-Decontamination Survey

This building was the most heavily contaminated of the buildings

surveyed. The building had a concrete base with center structure fabricated from cinder block and additions to each side constructed with "Transite." There was a concrete drive up to one of the "Transite" additions and a macadam drive up to the other. Around the rear of the building there was a concrete walk that also proved contaminated. Within the building the contamination extended onto the walls of the structure. Because of the extensive interior and exterior contamination and the type of construction materials, used, it was proposed to demolish the building and remove the contaminated concrete and macadam around the building.

After all the utilities had been turned off, the building would first be dry vacuumed to reduce potential hazards during demolition. The building would then be carefully demolished with the aid of a bulldozer. All demolition equipment would be checked before removal from the premises

2. Decontamination

The interior of the building was vacuumed and then all of the utilities turned off. A bulldozer with a 14 foot blade was used to demolish the building and the debris was stacked for shipment off-site. The contaminated concrete and macadam between Building #8 and section 45, Building #2 was totally removed and also stacked for shipment off-site. During the course of this operation the bulldozer unearthed an uncharted sump approximately 15 feet in diameter by 20 feet deep and narrowly escaped an accident.

E. Other Areas

1. Pre-Decontamination Survey

Meter readings on the soil on which 30 and 55 gallon drums were stored between buildings 6 and 7 and sump #2 indicated heavy soil contamination.

It was proposed that the top four inches of soil would be removed on removal of of the contaminated drums.

All three sumps were checked but only sump #3 indicated levels requiring extensive decontamination. Removal of the top four inches of soil from this sump was also recommended.

2. Decontamination

The contaminated soil between Buildings 6 and 7 and sump #2 was removed with the aid of a bulldozer. The soil was then placed in sealed drums and shipped off-site.

In the case of sump #3, the removal of the top soil layer proved more difficult. The bottom of the sump was about 15 feet below grade which prevented the use of a bulldozer. Nor was it possible for personnel to stand in the bottom of the sump to perform manual operations due to the soft texture of the soil. The most effective method of removing the top soil layer was by the use of a crane with bucket. The soil was removed by this means and placed aboard tractor trailers for removal off-site.

III. COMMENTS AND CONCLUSIONS

Fifteen truckloads averaging 20 tons each for a total of 300 tons of contaminated waste material was shipped off-site starting on 9 November 1965 and ending on 27 December 1965. This material was placed on the truck in drums of bins using a forklift, crane or payloader.

All of the equipment used by Isotopes, Inc. in the decontamination operation was cleaned and checked before removal off-site. Because the decontamination techniques which were used tended to reduce air contamination, respirators were needed only when it was necessary to cut out contaminated ductwork. Twenty-four pre- and post-decontamination urine samples were collected and analyzed and all were found to be within the normal background range.

Five soil samples and two water samples and a tap water sample were analyzed by fluorimetry for uranium. The results are given in Appendix I. Since there was no water in sump #3 when the sumps were sampled, the probable uranium water concentration was estimated based on the results found for the ratio of water to soil activity in sumps #1 and #2.

The Appendix summarizes the health physics efforts in cleaning the 1293 area. In Appendix I the final decontamination survey and certificate are reproduced together with an addendum for the survey of the roof of Building #2 and the radiochemical results on the soil and water samples from the sumps. Appendix II reproduces the intermediate smear results which were taken following dry vacuum, scrub, wash and wet vacuum sequence. This was not done following each sequence in every area because experience had shown from the early surveys that two and usually three sequences were required to bring a contamin-

ated area within the prescribed limits, and intermediate surveys were deemed unnecessary. With the techniques and cleaning solutions which were used there was no area which could not be brought well below 100 dpm/100cm² removable contamination. Furthermore, with personnel control that was employed no spread of activity outside of originally contaminated areas was experienced. On the other hand, more difficulty was experienced in decontaminating to less than 2,000 dpm/100cm² fixed activity. This was partly the result of the depth to which the contamination had penetrated, and the porous surface of most contaminated areas. In some areas, such as Building #1, section 52, and the exterior concrete pad adjacent to it which were decontaminated below 100 dpm/100cm² removable the surfaces had to be removed because the average fixed contamination was greater than an average 2,000 dpm/100 cm². The acid solutions did not prove as effective as one might have hoped in decontamination since they dissolved the contaminant in the porous cracks and brought it to the surface where it was not entirely removed by wash solution.

Approximately 900 smears were taken on all surfaces in the course of the pre-, intermediate-, and post-contamination surveys. These smears covered an actual area of 100 square feet and, taken together with a spreading factor of about 10 square feet, an estimated 10,000 square feet was carefully checked out of a total floor area of 50,000 square feet. It is felt that such surveillance leaves only a small probability that areas above 100 dpm/100cm² removable and 2,000 dpm/100 cm² average fixed still exist in the 1293 area.

APPENDIX I

Copy of Original Decontamination

Certificate with Addendum

CERTIFICATE OF DECONTAMINATION

This is to certify that the following location

Sylvania Electric Products, Inc.
Sylcor Division
1293 Area
Cantiague Road
Hicksville, New York 11802

has been decontaminated to the following limits

0 to 100 alpha dpm per 100 cm² transferable contamination
and 0 to 2,000 alpha dpm per 100 cm² fixed contamination.

Transferable contamination was determined with a windowless flow counter operating in the alpha proportional region. The counter was calibrated with a Pu-239 alpha standard with an activity of 2914 dpm and operated with an efficiency of 50%.

Fixed contamination was determined with an Eberline Instrument Corporation Model PAC-3G Gas Proportional Alpha Counter. This instrument was calibrated with a Pu-239 alpha standard with an activity of 2914 dpm. Overall efficiency, including area correction, was 27%. Meter response equivalent to 2,000 alpha dpm per 100 cm² was therefore 540 cpm.

The above location is decontaminated in conformity with the State of New York Industrial Code Rule Number 38-29. All work performed in accordance with U. S. Atomic Energy Commission Title 10, Part 20 and New York State Industrial Code Rule 38.


Head, Health Physics Section
January 3, 1966

A-I-3

Parking Field #1

Parking Field #3

CFP

Bldg. 5

CORP

AE

Parking Field #2

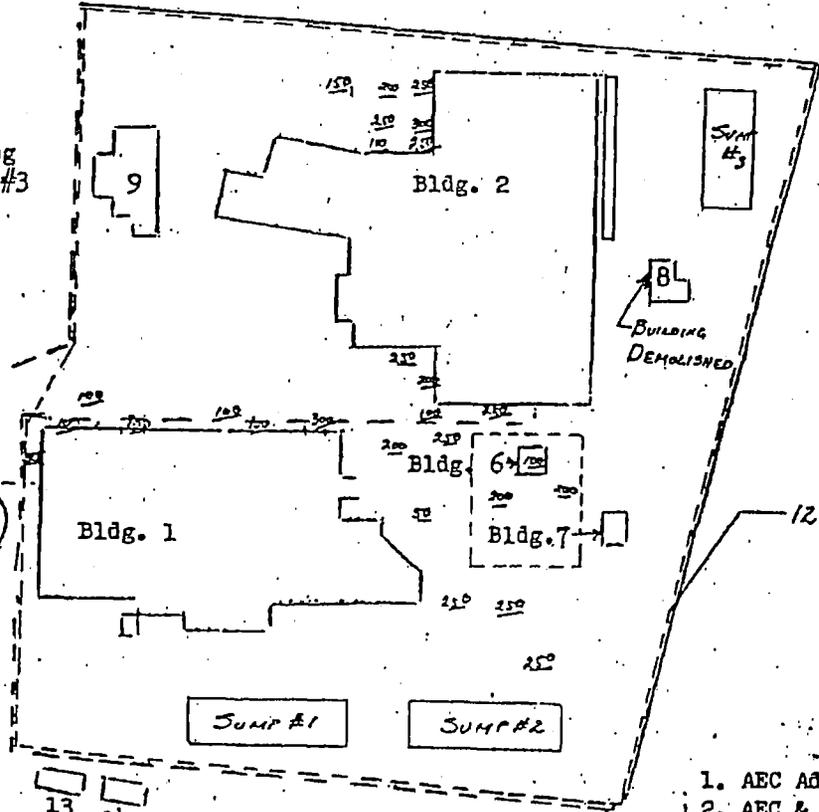
3

Bldg. 10

11 15

12

Bldg. 4



MUSTER AREA

- (CFP) COMMERCIAL FACILITIES
- (CORP) CORPORATE FACILITIES
- (AEC) AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SURFACE CONTAMINATION SURVEY
 SURVEY INSTRUMENT: EBERLINE INSTRUMENT
 CORP. PAC 3G WITH ALPHA PROBE
 DATE OF SURVEY 21 AND 23 DEC 1965
 INSTRUMENT CALIBRATION: 550 CPM ~
 2000 DPM
 100 CM²
 ALL UNDERLINED READINGS IN CPM

A-1-4

Parking Field #1

Parking Field #3

Bldg. 5

CORP

AE

Parking Field #2

Bldg. 1

Bldg. 2

Bldg. 8
BUILDING DEMOLISHED

Bldg. 6

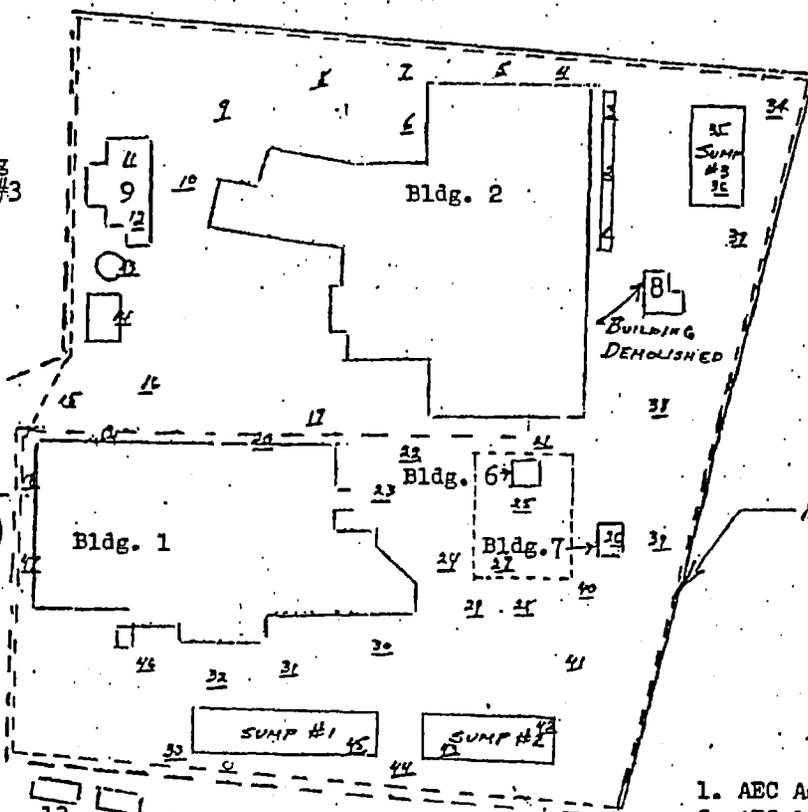
Bldg. 7

1213 AREA

Bldg. 10

11 15

Bldg. 4



MUSTER AREA

- COMMERCIAL FACILITIES
- CORPORATE FACILITIES
- AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SMEAR SURVEY: 1-33 ON CONCRETE OR MACADAM

SOIL/GRASS SURVEY: 34-47

DATE OF SURVEY: 27 DEC 1965

SMEAR AND SOIL/GRASS NOS: UNDERLINED Nos.

SMEAR RESULTS

Location of Survey Sylcor 1293 Area (Exterior) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS (Pu ²³⁹)
STD#1	2863	2	1431.5			$\frac{\text{dpm}}{\text{cpm}} = \frac{2914}{1432} = 2.04$
BG#1	2	2	1.0			
BG#2	3	2	1.5			
BG#3	5	2	2.5	1.7 avg.		
1	3	2	1.5	-		
2	4	2	2.0	0.3	0.6	
3	5	2	2.5	0.8	1.6	
4	1	2	0.5	-	-	
5	3	2	1.5	-	-	
6	6	2	3.0	1.3	2.6	
7	7	2	3.5	1.8	3.6	
8	4	2	2.0	0.3	0.6	
9	6	2	3.0	1.3	2.6	
10	2	2	1.0	-	-	
11	8	2	4.0	2.3	4.6	
12	2	2	1.0	-	-	
13	3	2	1.5	-	-	
14	2	2	1.0	-	-	
15	5	2	2.5	0.8	1.6	

SMEAR RESULTS

Location of Survey Sylcor 1293 Area (Exterior) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
16	4	2	2.0	0.3	0.6	
17	3	2	1.5	-	-	
18	7	2	3.5	1.8	3.6	
19	5	2	2.5	0.8	1.6	
20	2	2	1.0	-	-	
21	9	2	4.5	2.8	5.6	
22	4	2	2.0	0.3	0.6	
23	9	2	4.5	2.8	5.6	
24	9	2	4.5	2.8	5.6	
25	7	2	3.5	1.8	3.6	
26	14	2	7.0	5.3	10.6	
27	5	2	2.5	0.8	1.6	
28	8	2	4.0	2.3	4.6	
29	9	2	4.5	2.8	5.6	
30	6	2	3.0	1.3	2.6	
31	10	2	5.0	3.3	6.6	
32	5	2	2.5	0.8	1.6	
33	5	2	2.5	0.8	1.6	

SMEAR RESULTS

Location of Survey Sylcor: 1293 Area (Exterior) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/31/65

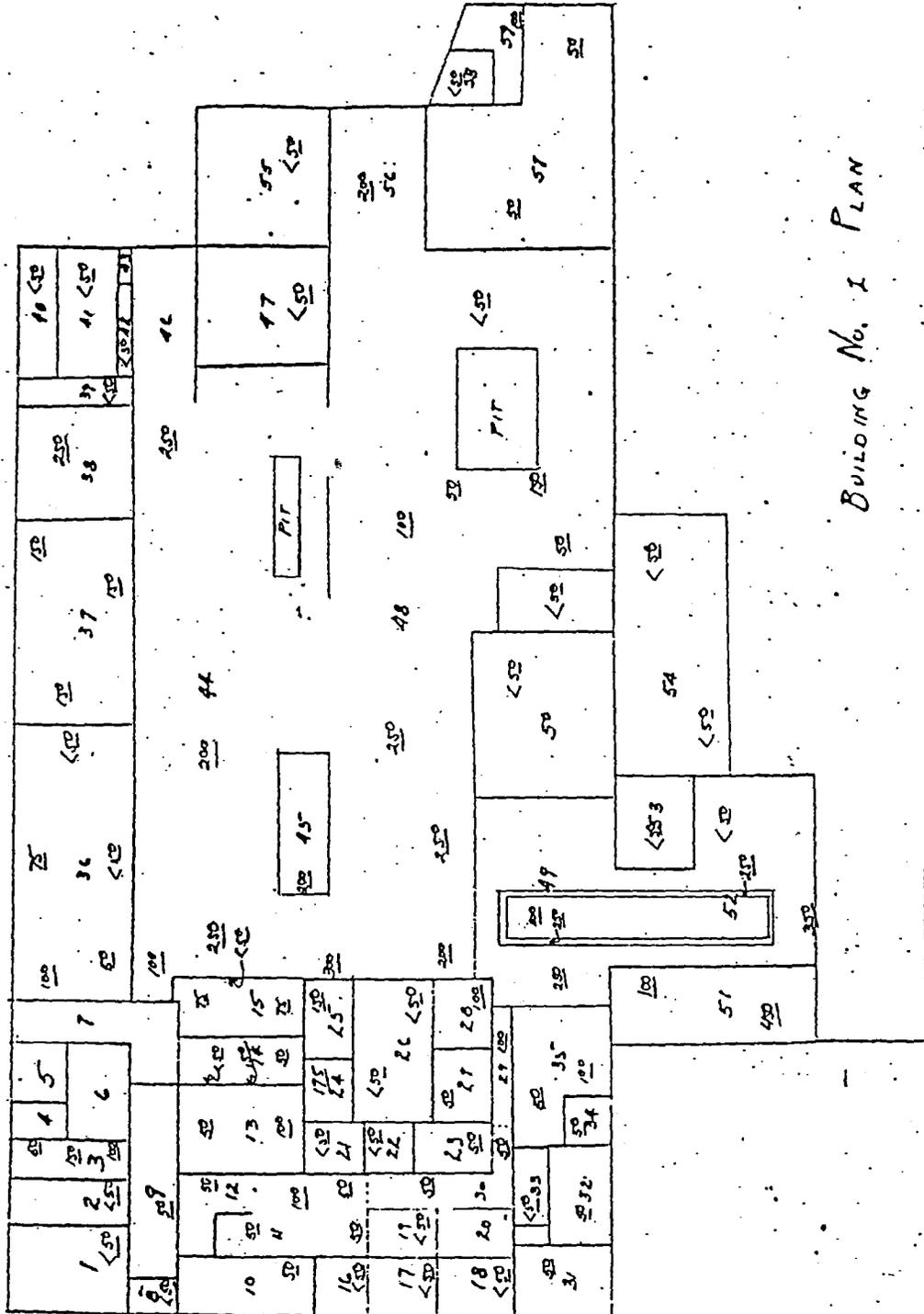
Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/g gram sample	REMARKS
34	8	2	4.0	3.2	6.4	Soil/Grass Samples
35	22	2	11.0	10.2	20.4	Soil/Grass Samples
36	28	2	14.0	13.2	26.4	Soil/Grass Samples
37	21	2	10.5	9.7	19.4	Soil/Grass Samples
38	4	2	2.0	0.2	0.4	Soil/Grass Samples
39	63	2	31.5	30.7	61.4	Soil/Grass Samples
40	15	2	7.5	6.7	13.4	Soil/Grass Samples
41	14	2	7.0	6.2	12.4	Soil/Grass Samples
42	8	2	4.0	3.2	6.4	Soil/Grass Samples
43	17	2	8.5	7.7	15.4	Soil/Grass Samples
44	8	2	4.0	3.2	6.4	Soil/Grass Samples
45	10	2	5.0	4.2	8.4	Soil/Grass Samples
46	7	2	3.5	2.7	5.4	Soil/Grass Samples
47	1	2	0.5	-	-	Soil/Grass Samples

SURFACE MONITORING - RFL.
 SURVEY INSTRUMENT: EBERLINE INSTRUMENT CORP. PAC-3G WITH ALPHA PROBE
 DATE OF SURVEY 27 AND 30 DEC 1965

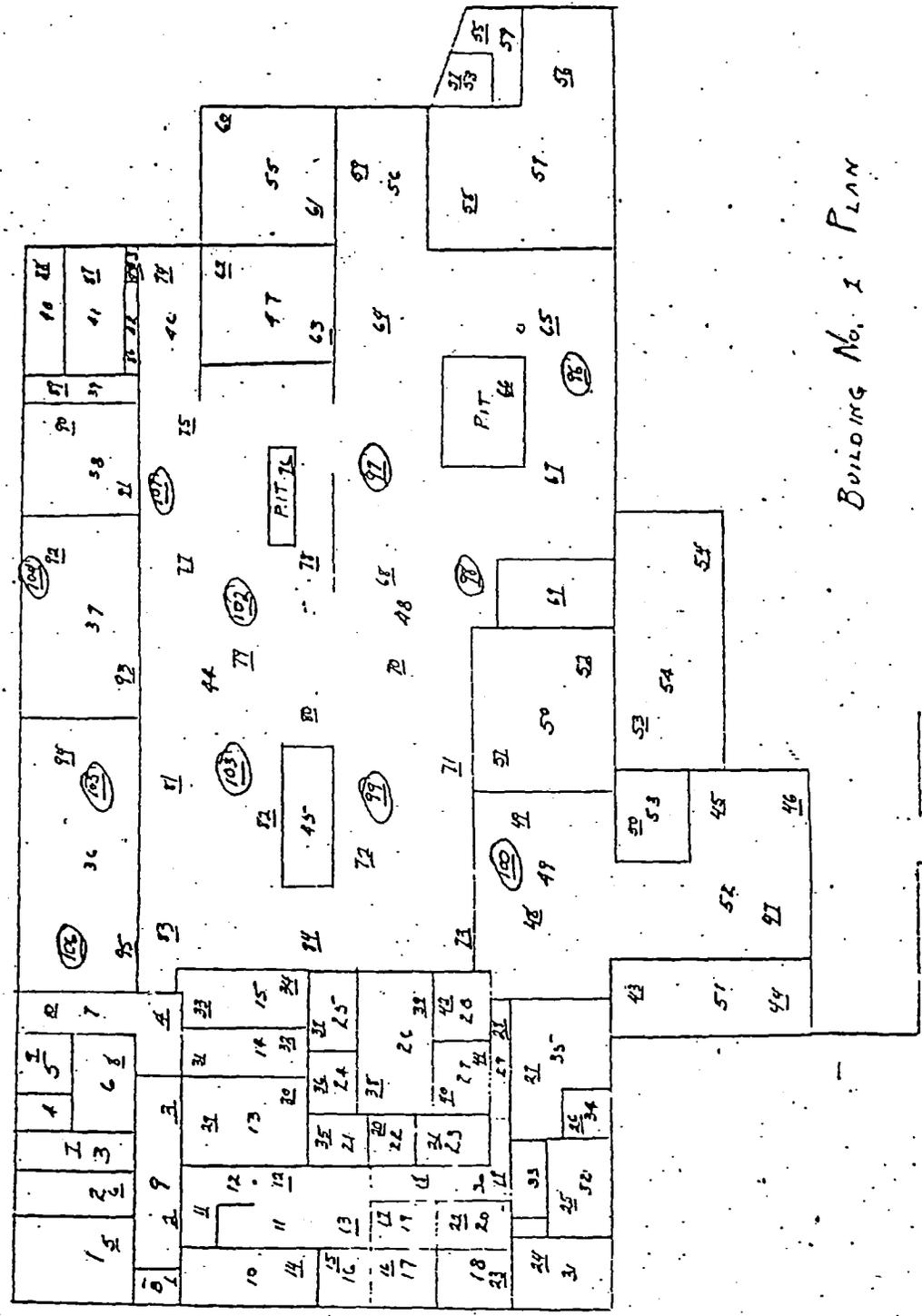
INSTRUMENT CALIBRATION: 550 CPM ~ 2000 RPM
 100 CPM

ALL UNDERLINED READINGS IN CPM



BUILDING No. 1 PLAN

SMEAR SURVEY
 DATE OF SURVEY : 27 DEC 1965
 SMEAR NOS. : UNDERLINED NOS.
 SMEAR NOS. CIRCLED : SMEARS TAKEN ON OVERHEAD FIXTURES



BUILDING No. 1 PLAN

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1295 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/28/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ (2914 dpm)
STD#1	2934	2				$\frac{\text{dpm}}{\text{cpm}} \frac{2914}{1467} = 1.9 \approx 2.0$
BG#1	5	2	2.5			
BG#2	3	2	1.5			
BG#3	4	2	2.0			
			average=2			
1	7	2	3.5	1.5	3.0	
2	5	2	2.5	.5	1.0	
3	3	2	1.5	-	-	
4	11	2	5.5	3.5	7.0	
5	7	2	3.5	1.5	3.0	
6	5	2	2.5	.5	1.0	
7	10	2	5.0	3.0	6.0	
8	6	2	3.0	1.0	2.0	
9	4	2	2.0	-	-	
10	11	2	5.5	3.5	7.0	
11	3	2	1.5	-	-	
12	8	2	4.0	2.0	4.0	
13	7	2	3.5	1.5	3.0	
14	5	2	2.5	.5	1.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/28/65
 Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
15	8	2	4.0	2.0	4.0	
16	6	2	3.0	1.0	2.0	
17	5	2	2.5	.5	1.0	
18	6	2	3.0	1.0	2.0	
19	4	2	2.0	-	-	
20	8	2	4.0	2.0	4.0	
21	2	2	1.0	-	-	
22	4	2	2.0	-	-	
23	9	2	4.5	2.5	5.0	
24	5	2	2.5	.5	1.0	
25	7	2	3.5	1.5	3.0	
STD#1	2876	2	-	-		Pu ²³⁹ (2914 dpm) dpm = 2914 cpm 1438 ≈ 2.0
BG#1	3	2	1.5			
BG#2	4	2	2.0			
BG#3	5	2	2.5			
			Av. = 2.0			
26	9	2	4.5	2.5	5.0	
27	10	2	5.0	3.0	6.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (12⁰³ Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/28/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100. cm ²	REMARKS
28	12	2	6.0	4.0	8.0	
29	4	2	2.0	-	-	
30	3	2	1.5	-	-	
31	14	2	7.0	5.0	10.0	
32	12	2	6.0	4.0	8.0	
33	30	2	15.0	13.0	26.0	
34	7	2	3.5	1.5	3.0	
35	1	2	-	-	-	
36	8	2	4.0	2.0	4.0	
37	9	2	4.5	2.5	5.0	
38	5	2	2.5	.5	1.0	
39	6	2	3.0	1.0	2.0	
40	12	2	6.0	4.0	8.0	
41	3	2	1.5	-	-	
42	4	2	2.0	-	-	
43	6	2	3.0	1.0	2.0	
44	4	2	2.0	-	-	
45	7	2	3.5	1.5	3.0	
46	9	2	4.5	2.5	5.0	

SMEAR RESULTS

Location of Survey Sylcor Bulding #1 (1203 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} - R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
47	7	2	3.5	1.5	3.0	
48	13	2	6.5	4.5	9.0	
49	5	2	2.5	.5	1.0	
50	7	2	3.5	1.5	3.0	
STD#1	1523	/				P ₁ 239 (2914 dpm) $\frac{\text{dpm}}{\text{cpm}} = \frac{2914}{1523} = 1.9 \approx 2.0$
BG#1	3	2	1.5			
BG#2	7	2	3.5			
BG#3	3	2	1.5			
			Av. ² 2.0			
51	5	2	2.5	.5	1.0	
52	17	2	8.5	6.5	13.0	
53	6	2	3.0	1.0	2.0	
54	4	2	2.0	-	-	
55	4	2	2.0	-	-	
56	11	2	5.5	3.5	7.0	
57	5	2	2.5	.5	1.0	
58	10	2	5.0	3.0	6.0	
59	8	2	4.0	2.0	4.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1203 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
60	7	2	3.5	1.5	3.0	
61	2	2	1.0	-	-	
62	8	2	4.0	2.0	4.0	
63	11	2	5.5	3.5	7.0	
64	16	2	8.0	6.0	12.0	
65	13	2	6.5	4.5	9.0	
66	7	2	3.5	1.5	3.0	
67	17	2	8.5	6.5	13.0	
68	13	2	6.5	4.5	9.0	
69	8	2	4.0	2.0	4.0	
70	14	2	7.0	5.0	10.0	
71	19	2	9.5	7.5	15.0	
72	22	2	11.0	9.0	18.0	
73	16	2	8.0	6.0	12.0	
74	11	2	5.5	3.5	7.0	
75	5	2	2.5	.5	1.0	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65
 Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ (2014 dnm) dpm <u>2914</u> cpm <u>1348</u> ≈ 2.0
STD#1	2649	2				
BG#1	4	2	2.0			
BG#2	3	2	1.5			
BG#3	4	2	2.0			
			Av. ≈ 2.0			
76	11	2	5.5	3.5	7.0	
77	8	2	4.0	2.0	4.0	
78	19	2	9.5	7.5	15.0	
79	12	2	6.0	4.0	8.0	
80	7	2	3.5	1.5	3.0	
81	9	2	4.5	2.5	5.0	
82	7	2	3.5	1.5	3.0	
83	8	2	4.0	2.0	4.0	
84	9	2	4.5	2.5	5.0	
85	6	2	3.0	1.0	2.0	
86	3	2	1.5	-	-	
87	10	2	5.0	3.0	6.0	
88	7	2	3.5	1.5	3.0	
89	4	2	2.0	-	-	

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
90	7	2	3.5	1.5	3.0	
91	8	2	4.0	2.0	4.0	
92	14	2	7.0	5.0	10.0	
93	17	2	8.5	6.5	13.0	
94	11	2	5.5	3.5	7.0	
95	9	2	4.5	2.5	5.0	
96	22	2	11.0	9.0	18.0	
97	8	2	4.0	2.0	4.0	
98	6	2	3.0	1.0	2.0	
99	11	2	5.5	3.5	7.0	
100	12	2	6.0	4.0	8.0	
101	7	2	3.5	1.5	3.0	
102	8	2	4.0	2.0	4.0	
103	5	2	2.5	.5	1.0	
104	14	2	7.0	5.0	10.0	
105	8	2	4.0	2.0	4.0	
106	5	2	2.5	.5	1.0	

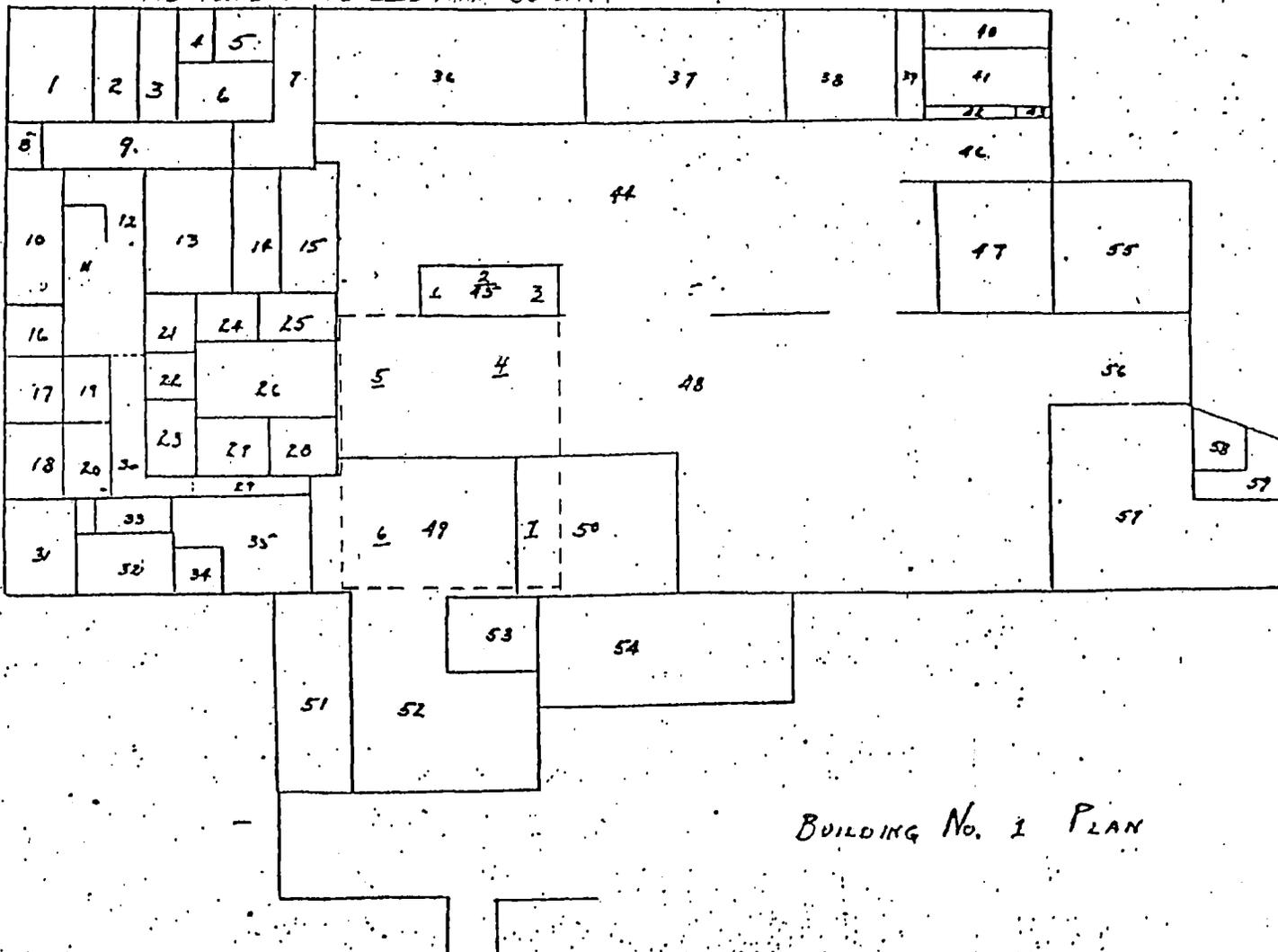
SMEAR SURVEY

DATE OF SURVEY: 27 DEC 1965

LOCATION: STAIRS, ROOM OVER PLATING AREA (ROOMS 49, 52 AND 53) AND ROOF

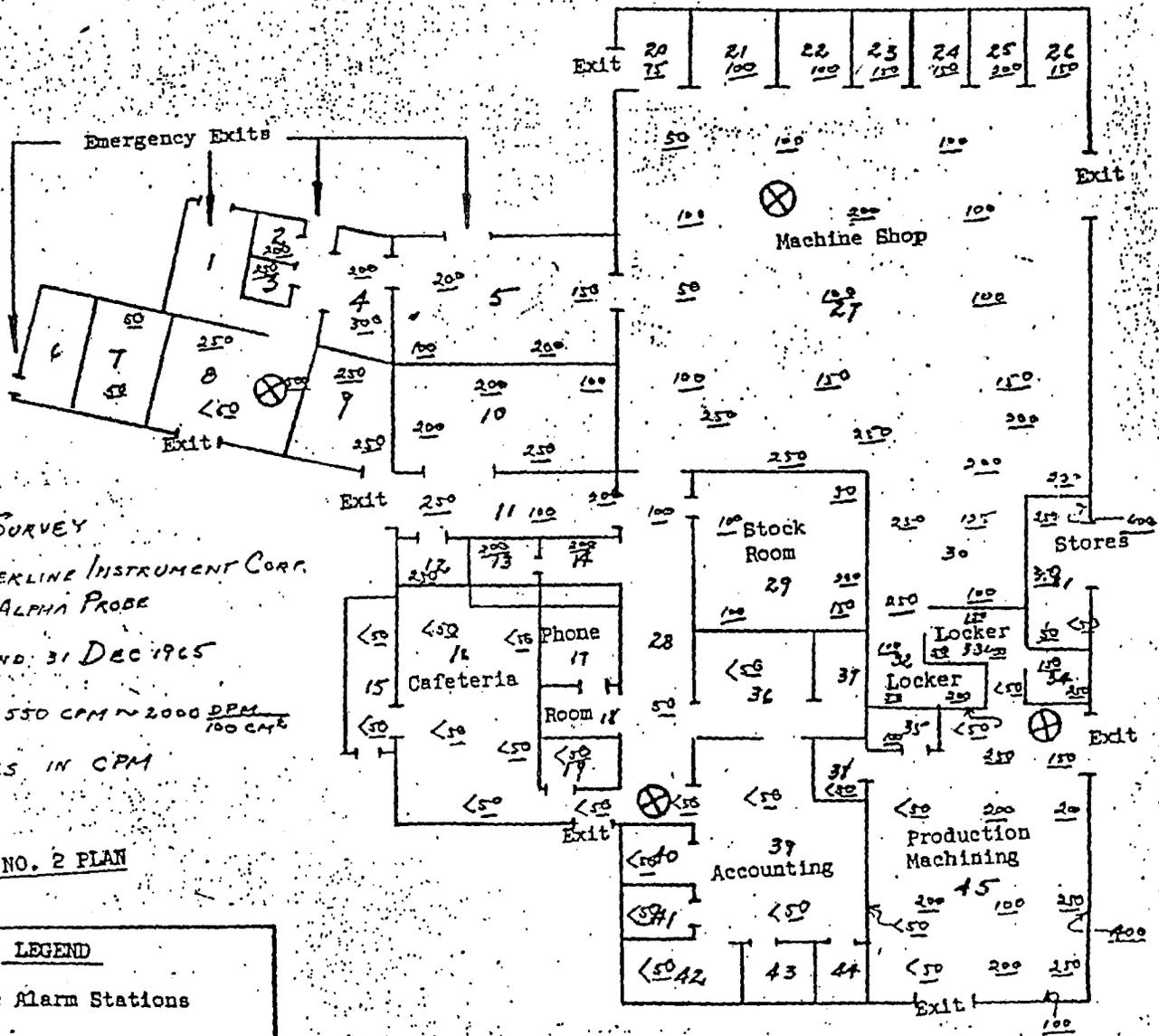
SMEAR NOS.: UNDERLINED NOS.

ALL AREAS WERE CHECKED ON ROOF WITH AN EBERLINE INSTRUMENT CORP. PAC-34 WITH ALPHA PROBE AND FOUND TO BE LESS THAN 50 CPM.



A-1-17

BUILDING No. 1 PLAN

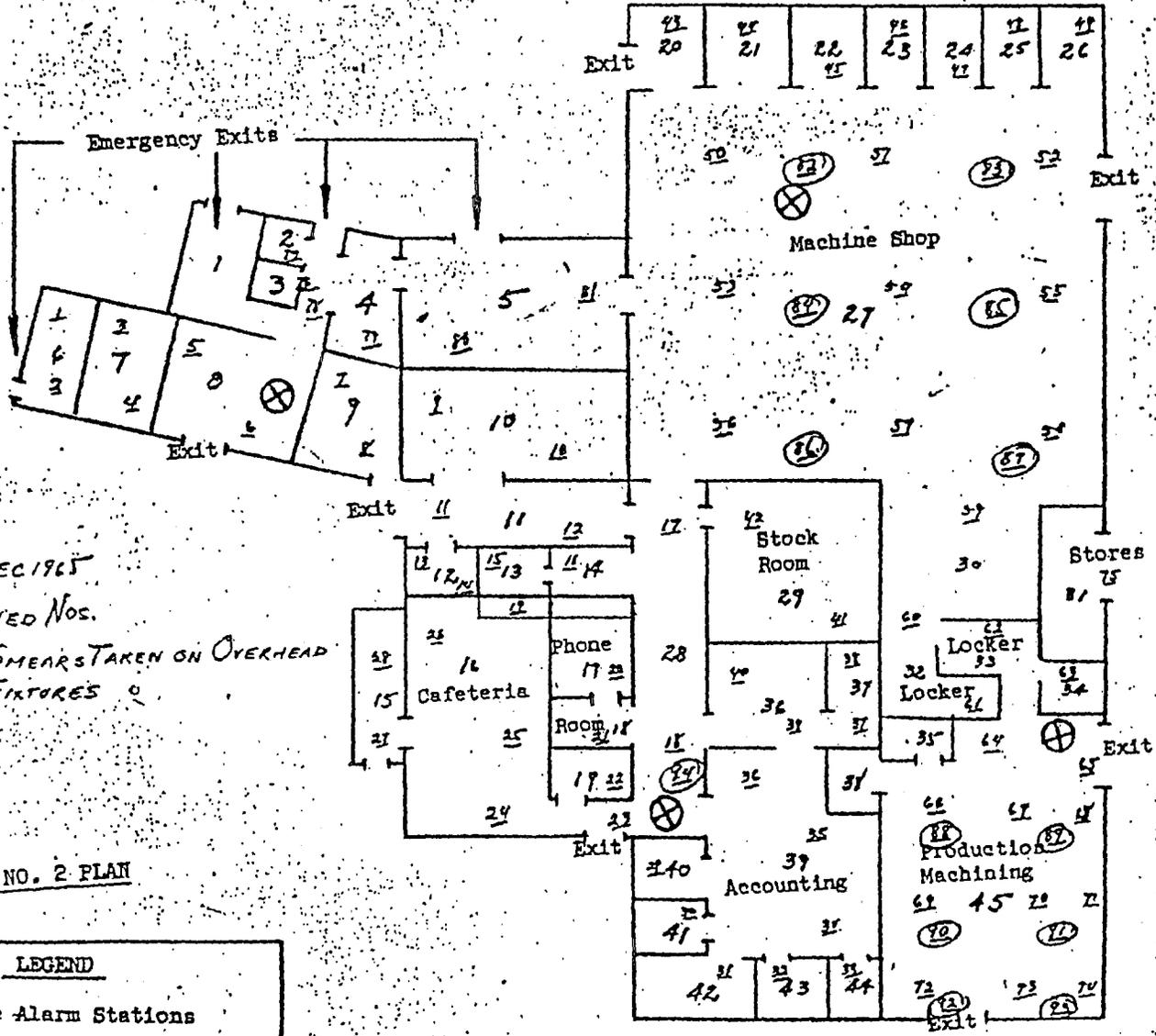


A-1-19

SURFACE CONTAMINATION SURVEY
 SURVEY INSTRUMENT: EBERLINE INSTRUMENT CORP.
 PAC 3 G WITH ALPHA PROBE
 DATE OF SURVEY 30 AND 31 DEC 1965
 INSTRUMENT CALIBRATION: 550 CPM ~ 2000 $\frac{DPM}{100 CM^2}$
 ALL UNDERLINED READINGS IN CPM

BUILDING NO. 2 PLAN

LEGEND	
⊗	Fire Alarm Stations



A-1-20

SMEAR SURVEY
 DATE OF SURVEY: 27 DEC 1965
 SMEAR NOS.: UNDERLINED NOS.
 SMEAR NOS. CIRCLED: SMEARS TAKEN ON OVERHEAD
 FIXTURES

BUILDING NO. 2 PLAN

LEGEND

⊗ Fire Alarm Stations

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 12/29/65
 Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu ²³⁹ : 2914 dpm
STD#1	2836	2	1418			$\frac{\text{dpm}}{\text{cpm}} = \frac{2914}{1418} = 2.05 \approx 2.0$
BG#1	4	2	2.0			
BG#2	3	2	1.5			
BG#3	3	2	1.5	1.7 Avg.		
1	30	2	15.0	13.3	26.6	
2	39	2	19.5	17.8	35.6	
3	6	2	3.0	1.3	2.6	
4	7	2	3.5	1.8	3.6	
5	6	2	3.0	1.3	2.6	
6	21	2	10.5	8.8	17.6	
7	11	2	5.5	3.8	7.6	
8	3	2	1.5	-	-	
9	7	2	3.5	1.8	3.6	
10	3	2	1.5	-	-	
11	3	2	1.5	-	-	
12	8	2	4.0	2.3	4.6	
13	4	2	2.0	0.3	0.6	
14	11	2	5.5	3.8	7.6	
15	7	2	3.5	1.8	3.6	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π :Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
16	3	2	1.5	-	-	
17	6	2	3.0	1.3	2.6	
18	9	2	4.5	2.8	5.6	
19	9	2	4.5	2.8	5.6	
20	6	2	3.0	1.3	2.6	
21	6	2	3.0	1.3	2.6	
22	9	2	4.5	2.8	5.6	
23	2	2	1.0	-	-	
24	5	2	2.5	0.8	1.6	
25	4	2	2.0	0.3	0.6	
26	10	2	5.0	3.3	6.6	
27	6	2	3.0	1.3	2.6	
28	7	2	3.5	1.8	3.6	
29	5	2	2.5	0.8	1.6	
30	5	2	2.5	0.8	1.6	
31	3	2	1.5	-	-	
32	5	2	2.5	0.8	1.6	
33	2	2	1.0	-	-	
34	1	2	0.5	-	-	

SMEAR RESULTS

Location of Survey Sylcor: Building #2 (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
35	2	2	1.0	-	-	
36	9	2	4.5	2.8	5.6	
37	2	2	1.0	-	-	
38	7	2	3.5	1.8	3.6	
39	14	2	7.0	5.3	10.6	
40	3	2	1.5	-	-	
41	12	2	6.0	4.3	8.6	
42	3	2	1.5	-	-	
43	9	2	4.5	2.8	5.6	
44	6	2	3.0	1.3	2.6	
45	8	2	4.0	2.3	4.6	
46	10	2	5.0	3.3	6.6	
47	11	2	5.5	3.8	7.6	
48	15	2	7.5	5.8	11.6	
49	14	2	7.0	5.3	10.6	
50	8	2	4.0	2.3	4.6	
51	10	2	5.0	3.3	6.6	
52	5	2	2.5	0.8	1.6	
53	13	2	6.5	4.8	9.6	



SMEAR RESULTS

Location of Survey Sylcor Building #2: (1293 Area) Date of Survey 12/27/65

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/29/65

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
54	6	2	3.0	1.3	2.6	
55	8	2	4.0	2.3	4.6	
56	17	2	8.5	6.8	13.6	
57	5	2	2.5	0.8	1.6	
58	6	2	3.0	1.3	2.6	
59	8	2	4.0	2.3	4.6	
60	9	2	4.5	2.8	5.6	
61	3	2	1.5	-	-	
62	22	2	11.0	9.3	18.6	
63	10	2	5.0	3.3	6.6	
64	2	2	1.0	-	-	
65	4	2	2.0	0.3	0.6	
66	8	2	4.0	2.3	4.6	
67	3	2	1.5	-	-	
68	9	2	4.5	2.8	5.6	
69	8	2	4.0	2.3	4.6	
70	4	2	2.0	0.3	0.6	
71	1	2	0.5	-	-	
72	3	2	1.5	-	-	

SMEAR RESULTS

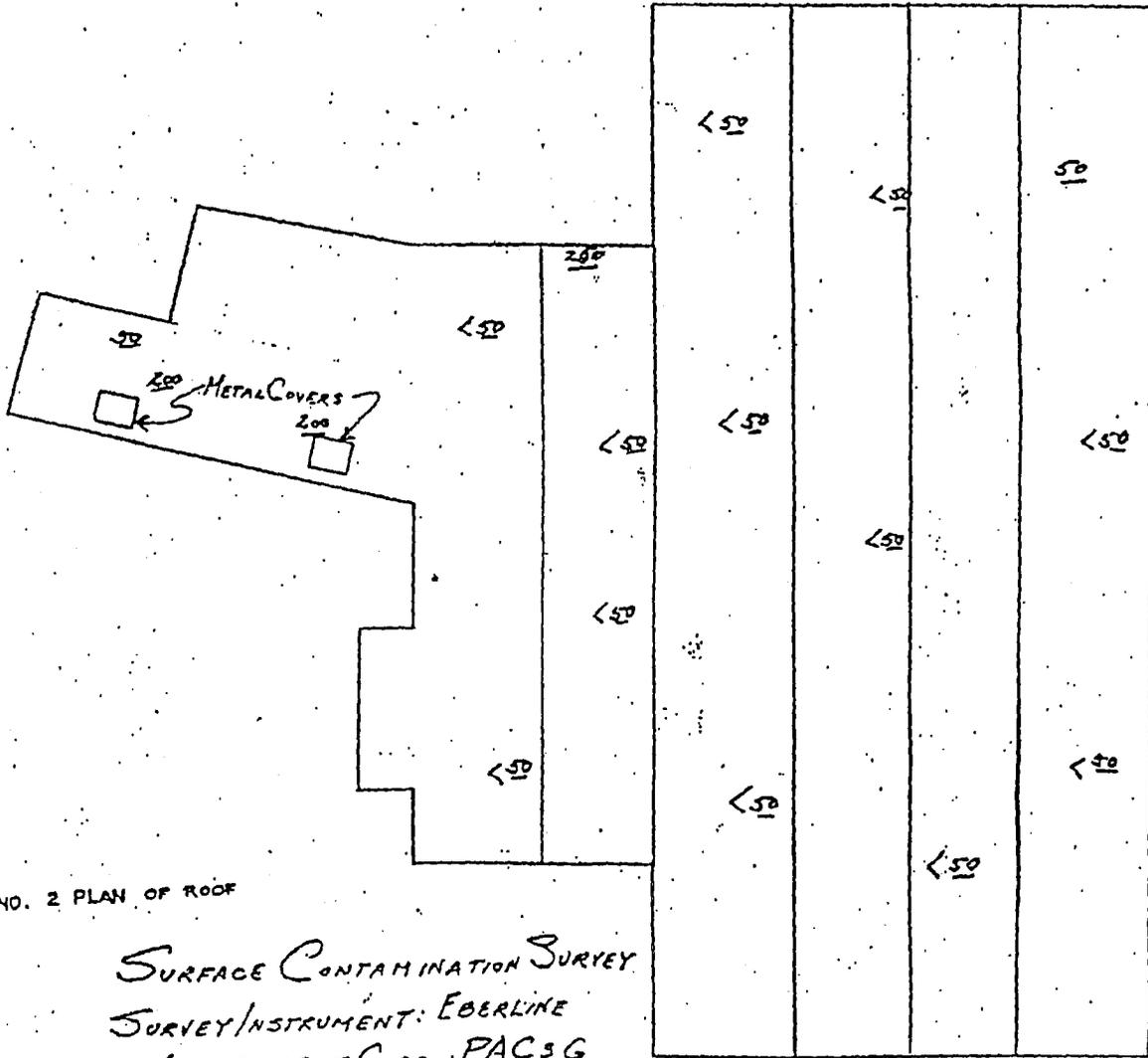
Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 12/27/65
 Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 12/31/65
 Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	NGROSS (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS Pu239: 2914 dpm
ST#1	2824	2	1412	1411		$\frac{\text{dpm} = 2914}{\text{cpm} = 1411} = 2.06 \approx 2.0$
BG#1	2	2	1.0			
BG#2	1	2	0.5			
BG#3	2	2	1.0	0.8 Avg.		
73	4	2	2.0	1.2	2.4	
74	2	2	1.0	0.2	0.4	
75	15	2	7.5	6.7	13.4	
76	6	2	3.0	2.2	4.4	
77	10	2	5.0	4.2	8.4	
78	13	2	6.5	5.7	11.4	
79	19	2	9.5	8.7	17.4	
80	10	2	5.0	4.2	8.4	
81	15	2	7.5	6.7	13.4	
82	31	2	15.5	14.7	29.5	
83	16	2	8.0	7.2	14.4	
84	21	2	10.5	9.7	19.4	
85	9	2	4.5	3.7	7.4	
86	8	2	4.0	3.2	6.4	
87	22	2	11.0	10.2	20.4	

A D D E N D U M

- I. Roof Survey
- II. Specific Chemical Analysis of Soil and Water Samples for Uranium

A-1-28



BUILDING NO. 2 PLAN OF ROOF

SURFACE CONTAMINATION SURVEY

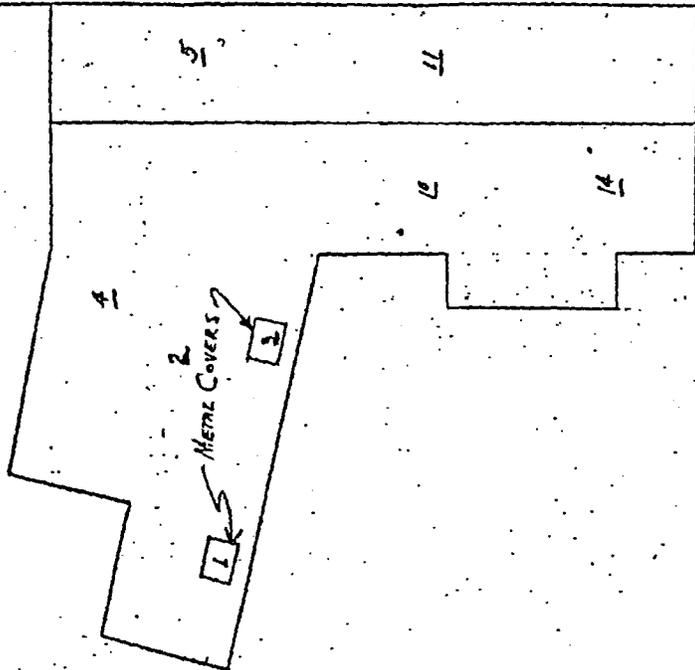
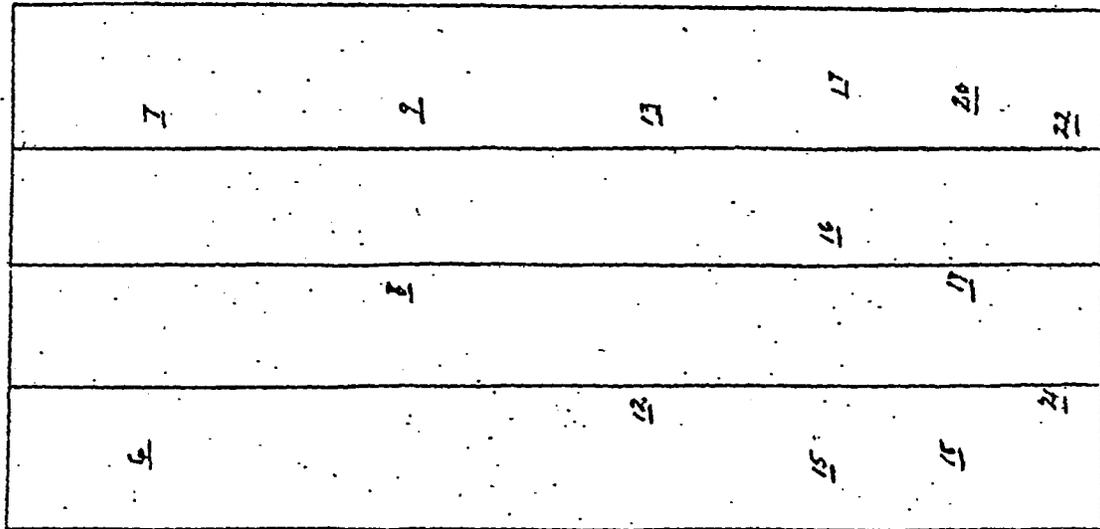
SURVEY INSTRUMENT: EBERLINE

INSTRUMENT CORP. PAC 3 G
WITH ALPHA PROBE

INSTRUMENT CALIBRATION 550 CPM ~ 2000 CPM
100 CHT

ALL UNDERLINED READINGS IN CPM

DATE OF SURVEY: 4 JAN 1966



BUILDING NO. 2 PLAN

SMEAR SURVEY ON ROOF OF

BLDG. NO. 2 : 1-22

DATE OF SURVEY 4 JAN. 1966

SMEAR NOS.: UNDERLINED NOS.

SMEAR RESULTS

Location of Survey Sylcor: 1293 Area :Roof of Bldg. #2 Date of Survey 4 January 1966

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting 7 January 1966

Person Doing Survey F. J. Bradley Person Doing Counting F. J. Bradley

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
STD #1	2920	2	1460	1458		Pu ²³⁹ : 2914 dpm dpm/cpm = 2914/1458 ~2.0
BG#3	4	2	2.0			
BG#1	4	2	2.0			
BG#2	2	2	1.0	1.7 avg.		
1	7	2	3.5	1.8	3.6	
2	6	2	3.0	1.3	2.6	
3	3	2	1.5	-	-	
4	2	2	1.0	-	-	
5	8	2	4.0	2.3	4.6	
6	3	2	1.5	-	-	
7	1	2	0.5	-	-	
8	3	2	1.5	-	-	
9	3	2	1.5	-	-	
10	1	2	0.5	-	-	
11	6	2	3.0	1.3	2.6	
12	3	2	1.5	-	-	
13	0	2	-	-	-	
14	2	2	1.0	-	-	
15	2	2	1.0	-	-	

A-1-32

Parking Field #1

Parking Field #3

Bldg. 5

CORP

AE

Parking Field #2

CPP

3

Bldg. 10

11 15

12

Bldg. 4

9

Bldg. 2

SUMP #3

SUMP DRY

8

Bldg. 6

Bldg. 1

Bldg. 7

1293 AREA

SUMP #1

SUMP #2

H₂O LEVEL

H₂O LEVEL

MUSTER AREA

CPP

COMMERCIAL FACILITIES

CORP

CORPORATE FACILITIES

AEC

AEC FACILITIES

LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SPECIFIC CHEMICAL ANALYSIS
 of SOIL AND SUMP H₂O SAMPLES
 FOR URANIUM or FLUORINE

DATE SAMPLES COLLECTED: 6 JAN 1966

WATER AND SOIL SAMPLE RESULTS

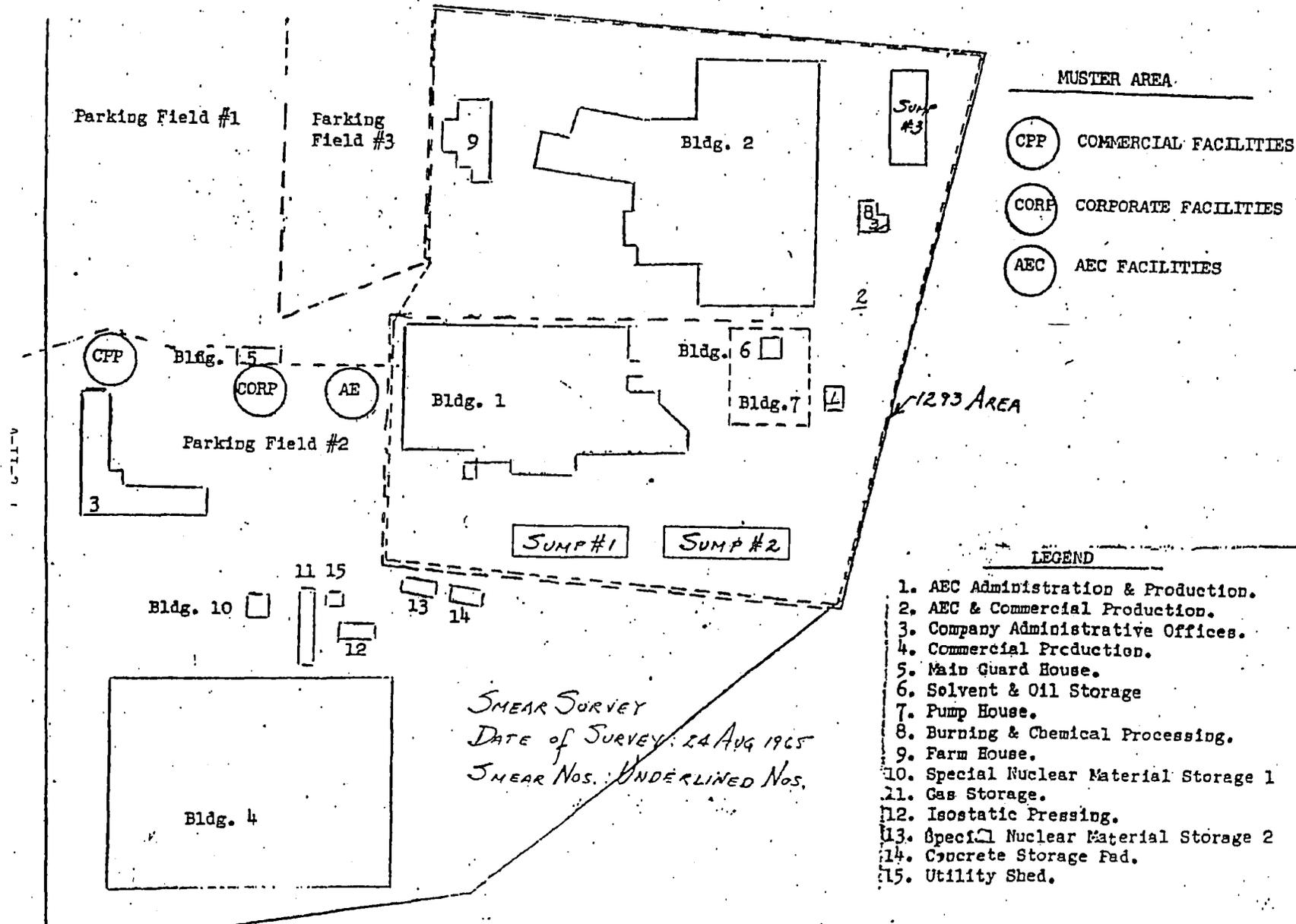
Sample Number	Weight of Sample (Grams)	Volume of Sample (ml)	Activity ¹ picocurie gram or ml	% of MPC $\left(\frac{x}{20 \text{ pc/ml}}\right)$ Gen. pop.
Soil #1	8.1855		49.1	
Soil #2	NOT ANALYZED			
Soil #3	8.5960		66.0	
Soil #4	11.0558		15.0	
Soil #5	14.5939		126	
Soil #6	27.1072		74.7	
H ₂ O Sump #1		440	0.058	0.29
H ₂ O Sump #2		546	0.103	0.52
H ₂ O Sump #3			0.284	1.42) ²
Tap Water		163	< 0.01	

¹ Estimated standard error \pm 20%.

² Estimation based on relation between water and soil activity in sumps 1 & 2.

APPENDIX II

Pre-Decontamination Surveys



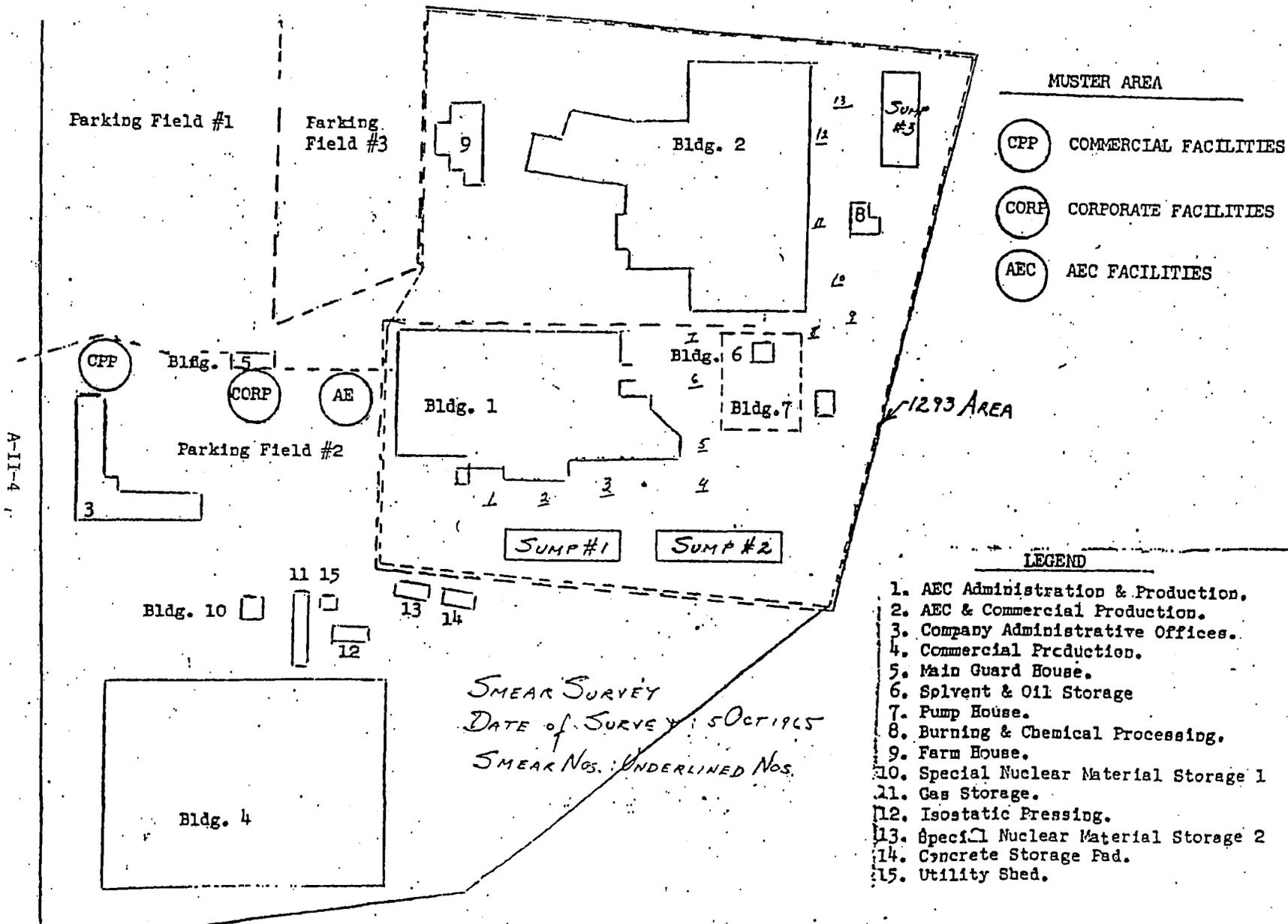
MUSTER AREA.

- CPP COMMERCIAL FACILITIES
- CORP CORPORATE FACILITIES
- AEC AEC FACILITIES

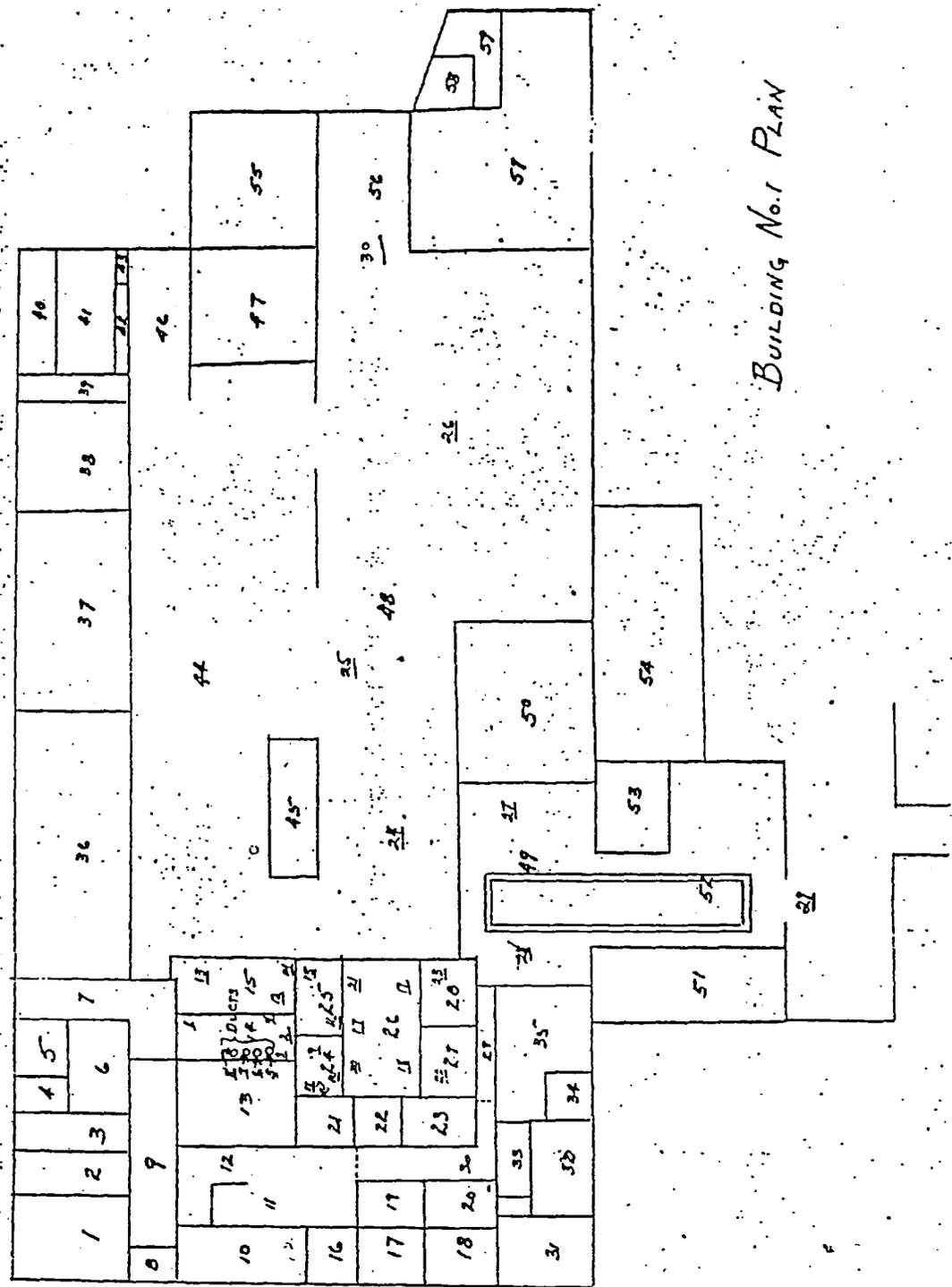
LEGEND

1. AEC Administration & Production.
2. AEC & Commercial Production.
3. Company Administrative Offices.
4. Commercial Production.
5. Main Guard House.
6. Solvent & Oil Storage
7. Pump House.
8. Burning & Chemical Processing.
9. Farm House.
10. Special Nuclear Material Storage 1
11. Gas Storage.
12. Isostatic Pressing.
13. Special Nuclear Material Storage 2
14. Concrete Storage Pad.
15. Utility Shed.

SNEAR SURVEY
 DATE OF SURVEY: 24 AUG 1965
 SNEAR NOS. UNDERLINED NOS.



SMEAR SURVEY
 DATE OF SURVEY: 24 AUG 1965
 SMEAR NOS.: UNDERLINED NOS.



BUILDING No. 1 PLAN

SMEAR RESULTS

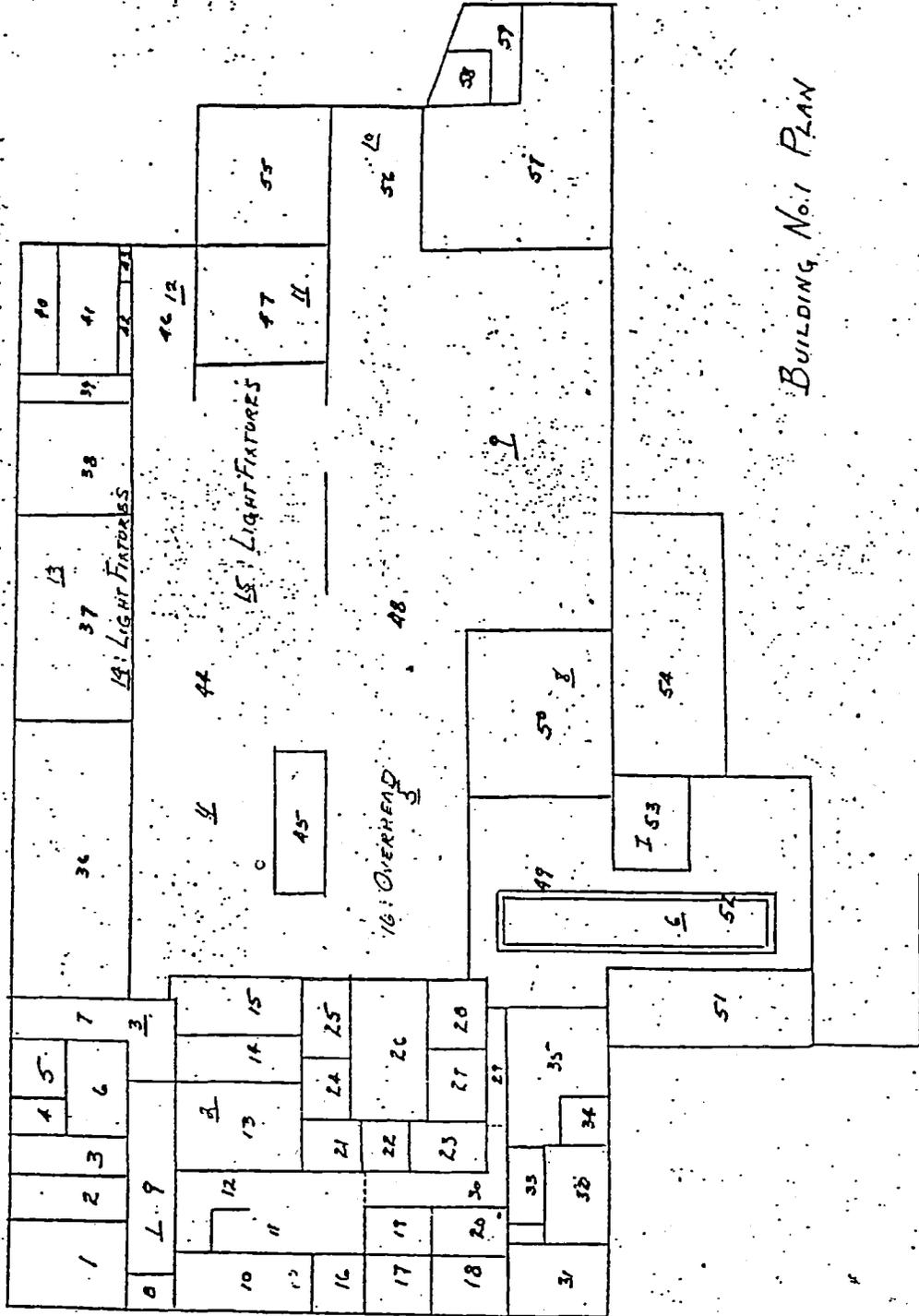
Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 24 August 1965

Counting Instrument RIDL 2π: Proportional (Windowless) Date of Counting _____

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG	3	10	0.3			
1	124	1	124		248	
2	94	1	94		188	
3	58	1	58		116	
4	83	1	83		166	
5	314	1	314		628	
6	227	1	227		454	
7	437	1	437		874	
8	852	1	852		1704	
9	113	1	113		226	
10	44	1	44		88	
11	110	1	110		220	
12	48	1	48		96	
13	123	1	123		246	
14	72	1	72		144	
15	58	1	58		116	
16	66	1	66		132	
17	62	1	62		124	
18	54	1	54		108	

SMEAR SURVEY
 DATE OF SURVEY: 5 OCT. 1965
 SMEAR NOS.: UNDERLINED NOS.



BUILDING No. 1 PLAN

SMEAR RESULTS

Location of Survey Sylcor Building #1 (1293 Area) Date of Survey 5 October 1965

Counting Instrument RIDL 2 π : Proportional (Windowless) Date of Counting 7 October 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} - R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
1	2	2	1.0	-	-	
2	3	2	1.5	0.5	1.0	
3	3	2	1.5	0.5	1.0	
4	7	2	3.5	2.5	5.0	
5	9	2	4.5	3.5	7.0	
6	16	2	8.0	7.0	14.0	
7	10	2	5.0	4.0	8.0	
8	14	2	7.0	6.0	12.0	
9	6	2	3.0	2.0	4.0	
10	1	2	0.5	-	-	
11	5	2	2.5	1.5	3.0	
12	4	2	2.0	1.0	2.0	
13	3	2	1.5	0.5	1.0	
14	4	2	2.0	1.0	2.0	
15	5	2	2.5	1.5	3.0	
16	11	2	5.5	4.5	9.0	

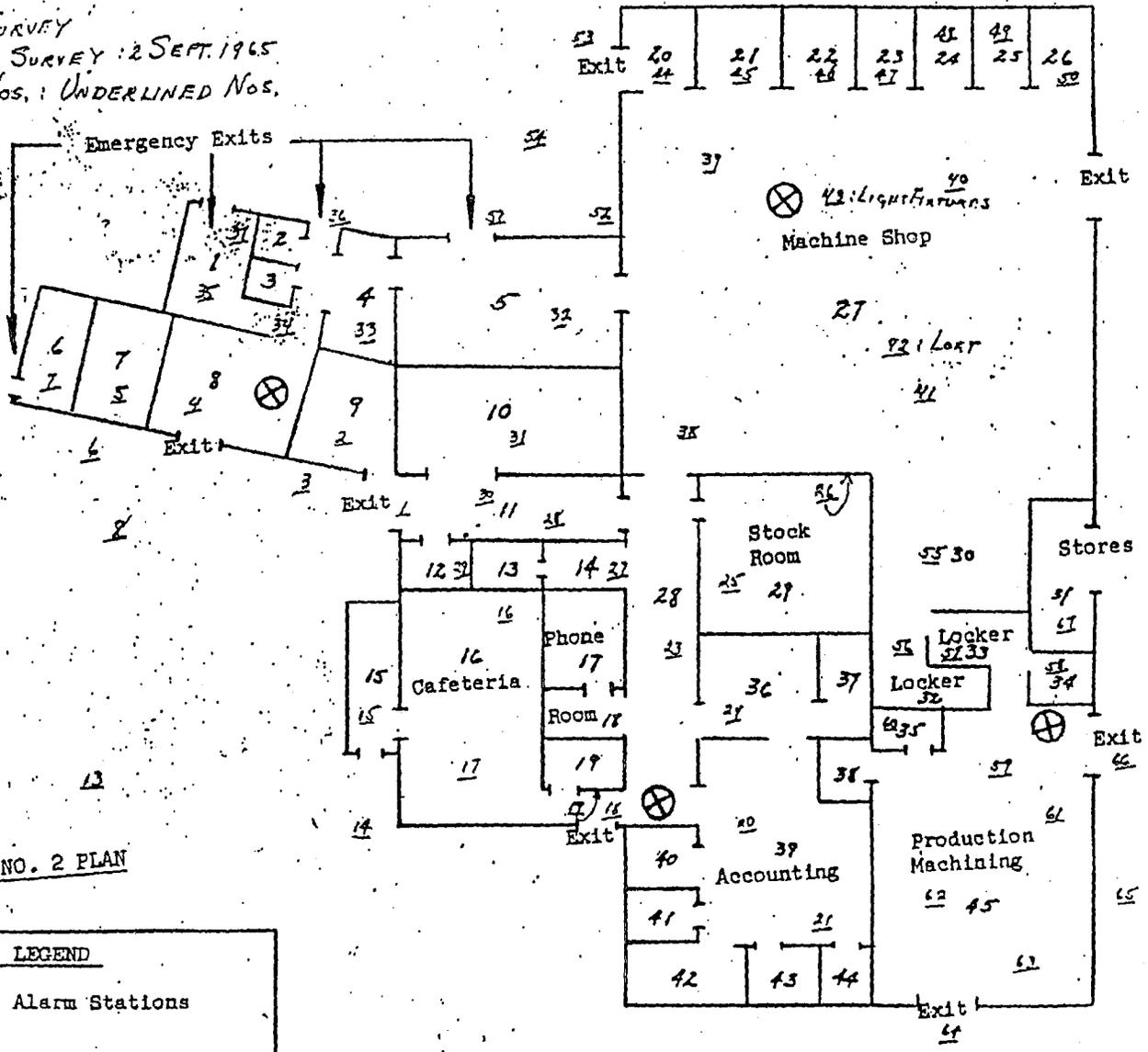
SHEAR SURVEY
 DATE OF SURVEY: 2 SEPT. 1965
 SHEAR NOS.: UNDERLINED NOS.

WOODEN
 STRUCTURE
 10

TANK

12

A-11-11



BUILDING NO. 2 PLAN

LEGEND
 ⊗ Fire Alarm Stations

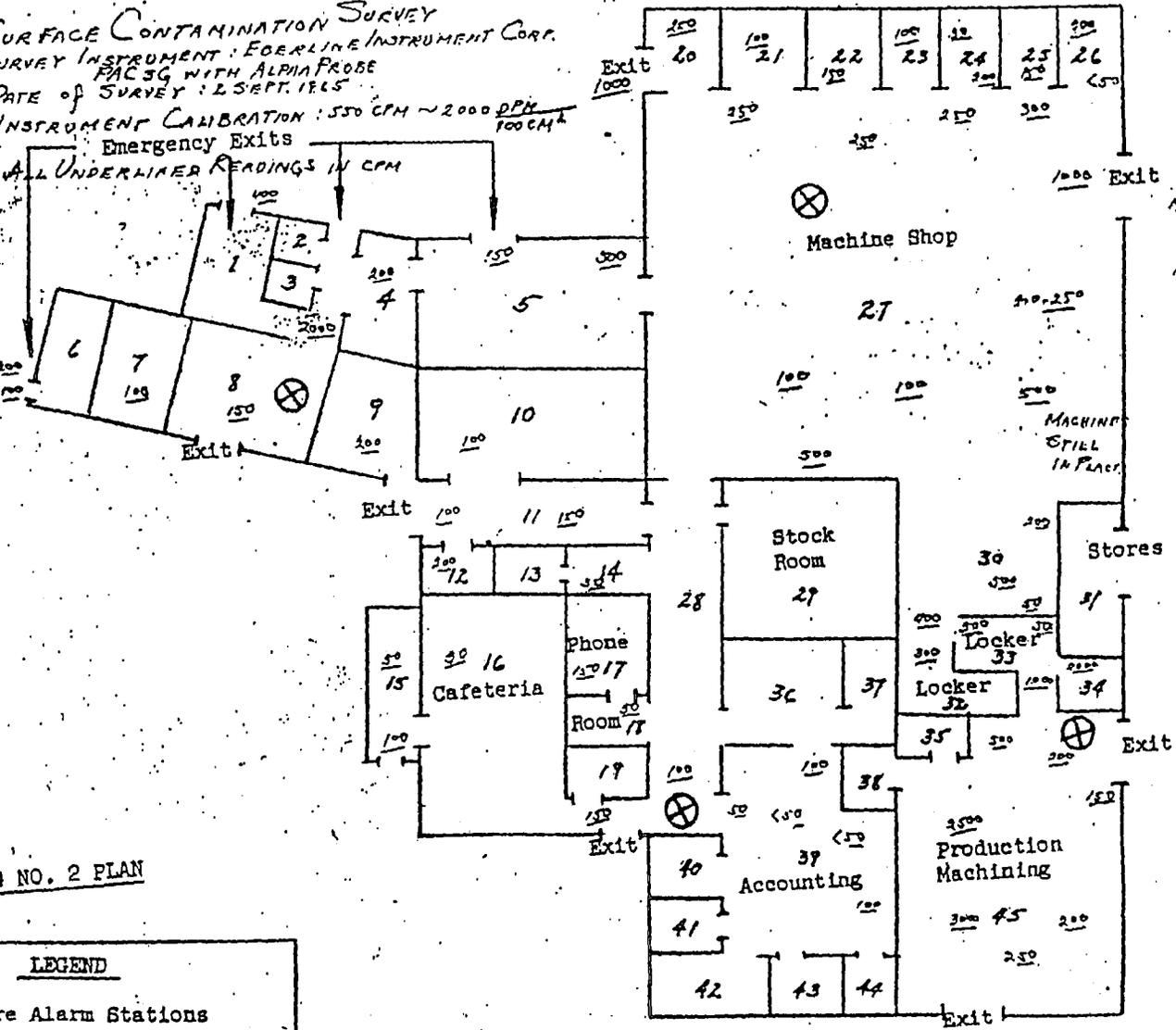
SURFACE CONTAMINATION SURVEY
 SURVEY INSTRUMENT: FOERLINE INSTRUMENT CORP.
 PAC 3G WITH ALPHA PROBE
 DATE OF SURVEY: 12 SEPT. 1965
 INSTRUMENT CALIBRATION: 550 CPM ~ 2000 DPM
 100 CPM

Emergency Exits
 ALL UNDERLINED READINGS IN CPM

WOODEN
 STRUCTURE
 100
 150 150

TANK

A-11-12



BUILDING NO. 2 PLAN

LEGEND
 ⊗ Fire Alarm Stations

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 2 September 1965

Counting Instrument RIDL 2π Proportional (Windowless) Date of Counting 2 September 1965

Person Doing Survey F.J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} - R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
BG	25	137	0.18			
1	39	1	39		78	
2	36	1	36		72	
3	31	1	31		62	
4	28	1	28		56	
5	20	1	20		40	
6	36	1	36		72	
7	NOT APPLICABLE					
8	20	1	20		40	
9	9	1	9		18	
10	26	1	26		52	
11	31	1	31		62	
12	25	1	25		50	
13	21	1	21		42	
14	23	1	23		46	
15	25	1	25		50	
16	25	1	25		50	
17	21	1	21		42	
18	23	1	23		46	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 2 September 1965

Counting Instrument RIDL:2π Proportional (Windowless) Date of Counting 2 September 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} -R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
19	21	1	21		42	
20	21	1	21		42	
21	18	1	18		36	
22	29	1	29		58	
23	19	1	19		38	
24	21	1	21		42	
25	28	1	28		56	
26	26	1	26		52	
27	22	1	22		44	
28	18	1	18		36	
29	33	1	33		66	
30	24	1	24		48	
31	30	1	30		60	
32	16	1	16		32	
33	24	1	24		48	
34	28	1	28		56	
35	NOT APPLICABLE					
36	18	1	18		36	
37	NOT APPLICABLE					

SMEAR RESULTS

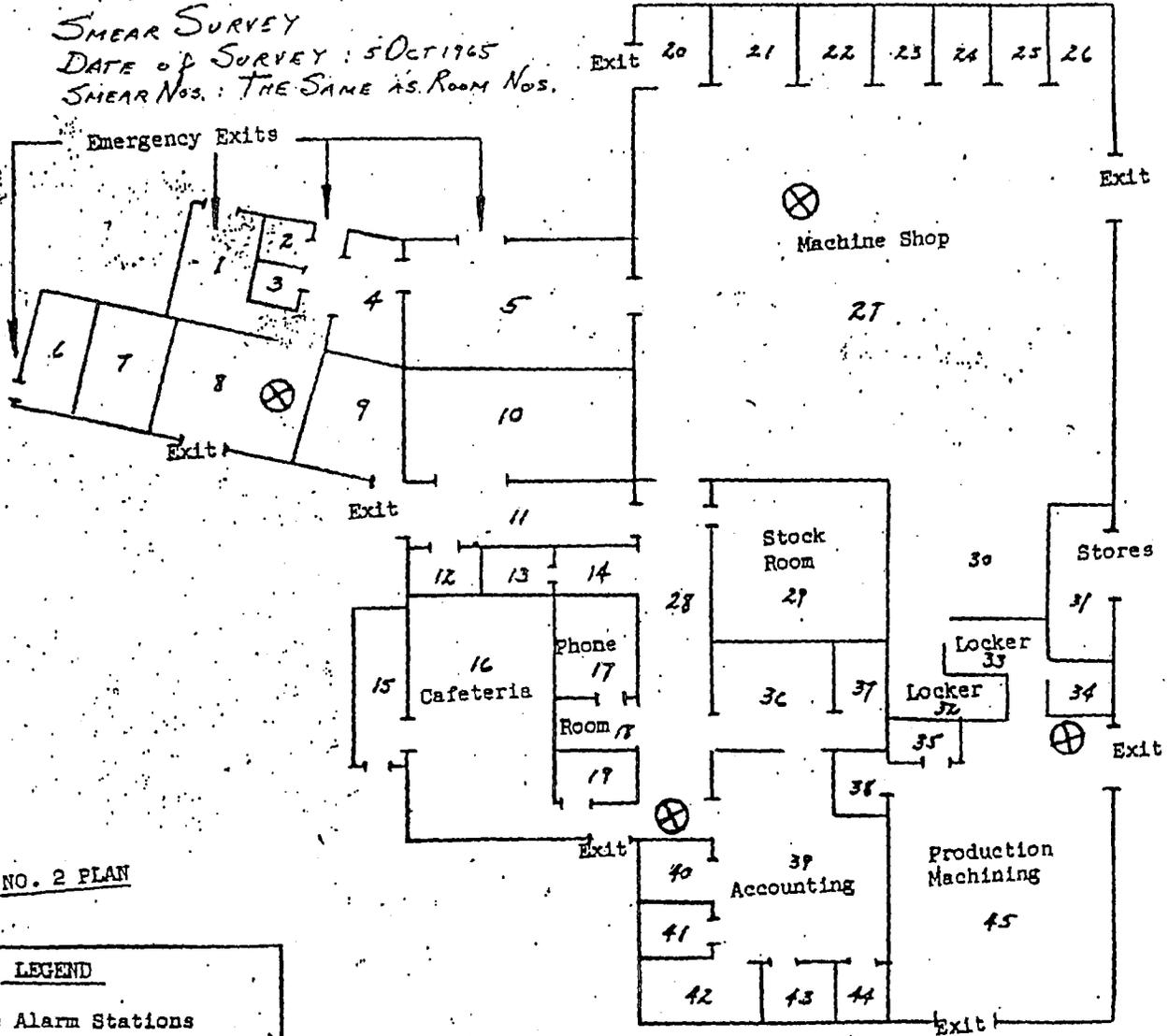
Location of Survey Sylcor Building #2 (Area 1293) Date of Survey 2 September 1965

Counting Instrument RIDL: 2π Proportional (Windowless) Date of Counting 2 September 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS} - R _{BG} (COUNTS/MIN)	ACTIVITY dpm/100cm ²	REMARKS
BG	2	2	1.0			
BG	6	5	1.2			
38	7	1	7	6	12	
39	0	1	-	-	-	
40	12	1	12	11	22	
41	12	1	12	11	22	
42	8	1	8	7	14	
43	5	1	5	4	8	
44	6	1	6	5	10	
45	9	1	9	8	16	
46	5	1	5	4	8	
47	5	1	5	4	8	
48	8	1	8	7	14	
49	8	1	8	7	14	
50	10	1	10	9	18	
51	2	1	2	1	2	
52	1	1	1	-	-	
53	1	1	1	-	-	
54	NOT COUNTED					

SMEAR SURVEY
 DATE OF SURVEY: 5 OCT 1965
 SMEAR NOS.: THE SAME AS ROOM NOS.



A-11-17

BUILDING NO. 2 PLAN

LEGEND	
⊗	Fire Alarm Stations



SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Date of Survey 5 October 1965
 Counting Instrument RIDL: 2π Proportional (Windowless) Date of Counting 7 October 1965
 Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
1	NOT	APPLICABLE				
2	43	5	8.6	7.6	15.2	
3	57	5	11.4	10.4	20.8	
4	125	5	25.0	24.0	48.0	
5	48	5	9.6	8.6	17.2	
6	NOT	APPLICABLE				
7	NO SMEARS		TAKEN			
8	NO SMEARS		TAKEN			
9	NO SMEARS		TAKEN			
10	82	5	16.4	15.4	30.8	
11	15	5	3.0	2.0	4.0	
12	14	5	2.8	1.8	3.6	
13	20	5	4.0	3.0	6.0	
14	22	5	4.4	3.4	6.8	
15	17	5	3.4	2.4	4.8	
16	17	5	3.4	2.4	4.8	
17	58	5	10.6	9.6	19.2	
18	39	5	7.8	6.8	13.6	
19	14	5	2.8	1.8	3.6	

SMEAR RESULTS

Location of Survey Sylcor Building #2 (1293 Area) Contt. Date of Survey 5 October 1965

Counting Instrument RIDL:2π Proportional (Windowless) Date of Counting 7 October 1965

Person Doing Survey F. J. Bradley Person Doing Counting J. V. Tekin

SMEAR NO.	N _{GROSS} (COUNTS)	t (MIN)	R _{GROSS} (COUNTS/MIN)	R _{GROSS-RBG} (COUNTS/MIN)	ACTIVITY dpm/100 cm ²	REMARKS
20	22	5	4.4	3.4	6.8	
21	10	2	5.0	4.0	8.0	
22	17	2	8.5	7.5	15.0	
23	23	2	11.5	10.5	21.0	
24	30	2	15.0	14.0	28.0	
25	61	2	30.5	29.5	59.0	
26	50	2	25.0	24.0	48.0	
27	25	2	12.5	11.5	23.0	
28	44	2	22.0	21.0	42.0	
29	30	2	15.0	14.0	28.0	
30	12	2	6.0	5.0	10.0	
31	36	2	12.0	11.0	22.0	
32	108	2	54.0	53.0	106.0	
33	50	2	25.0	24.0	48.0	
34	396	2	198.0	197.0	394.0	
35	15	2	7.5	6.5	13.0	
36	9	2	4.5	3.5	7.0	
37	N O S M E A R T A K E N					
38	185	2	92.5	91.5	183.0	

